ORDER NO. EMID951576
A4

Service Manual

Electronic Organ

SX-EA1

(M), (MC), (XM), (EN), (EH), (EF), (EZ), (EW), (EA), (EP), (EK), (XL), (XR), (XS), (XD), (XT), (X), (XP)

AREAS

(M):	U.S.A.
(MC):	Canada
(XM):	Mexico
(EN):	Norway, Sweden, Denmark, Finland
(EH):	Holland, Belgium
(EF):	France, Italy
(EZ):	Germany
(EW):	Switzerland
(EA):	Austria
(EP):	Spain, Portugal, Greece
(EK):	the United Kingdom
(XL):	New Zealand
(XR):	Australia
(XS):	Malaysia, Singapore, South Africa
(XD):	Saudi Arabia, Hong Kong, Kuwait
(XT):	Taiwan
(X):	Thailand, Indonesia, Iran, U.A.E., Panama, Argentina, Peru, Brasil
(XP):	Philippines

⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

■ Specifications

KEYBOARD		UPPER KEYBOARD: 44 KEYS, LOWER KEYBOARD: 44 KEYS PEDAL KEYBOARD: 13 KEYS
SOUND GENERATOR		PCM
MAXIMUM NUMBER OF NOTES PRODUCED SIMULTANEOUSLY		32 NOTES
SOUNDS	PARTS	UPPER KEYBOARD: ORGAN, SOUND, SOLO LOWER KEYBOARD: ORGAN, SOUND, SOLO
	UPPER	<SOUND, SOLO> 50 SOUNDS (10 GROUPS): PIANO, E PIANO, GUITAR, E GUITAR, BRASS, HARPSI/VIBES, STRINGS/VOCAL, REED, SAX/FLUTE, OTHERS <TAB>: 16', 8', 4', 2', PERC 2-2/3' <ORGAN>: 1-5 (16 PRESETS)
	LOWER	<SOUND, SOLO> 50 SOUNDS (10 GROUPS): PANO, E PIANO, GUITAR, E GUITAR, BRASS, HARPSI/VIBES, STRINGS/VOCAL, REED, SAX/FLUTE, OTHERS <TAB>: 8', 4', 2' <ORGAN>: 1, 2 (16 PRESETS)
	BASS	10 SOUNDS (5 GROUPS): ORGAN, CLASSICAL ORGAN, ACOUSTIC, ELECTRIC, ORCHESTRAL
EFFECTS	TREMOLO	UPPER ORGAN, LOWER ORGAN (SLOW/FAST)
	SUSTAIN	UPPER, LOWER, BASS
	DIGITAL EFFECT	UPPER, LOWER, BASS
	DIGITAL REVERB	○
	GLIDE	UPPER
TRANSPOSE		G-C-F#
TECHNI-CHORD		○
RHYTHM	RHYTHM	48 RHYTHMS (12 RHYTHMS×4 VARIATIONS): 8 BEAT, 16 BEAT, BIG BAND/SWING, JAZZ COMBO, LATIN1, LATIN2, ROCK/DISCO, ROCK (OTHERS), COUNTRY, TRAD/SHOW, MARCH/WALTZ, ETHNIC
	CONTROL	START/STOP, SYNCHRO & BREAK, INTRO & ENDING, FILL IN 1, 2, COUNT INTRO, TEMPO
	KEYBOARD PERCUSSION	37 KEYS

Technics

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CONTROLS	VOLUME, TEMPO, TRANSPOSE
AUTO PLAY CHORD	AUTO PLAY CHORD (ONE FINGER, FINGERED, PIANIST, MEMORY)
EASY PLAY STYLE	ONE TOUCH REGISTRATION, ONE TOUCH PLAY, MUSIC STYLE ARRANGER
PANEL MEMORY	1-5, SET
SEQUENCER	STEP RECORD (CHORD) STORAGE CAPACITY: 300 STEPS
MIDI	START/STOP, MIDI CLOCK, NOTE ONLY, PROGRAM CHANGE MODE, DRUMS OUT, APC OUT, TRANSPOSE OUT, TECHNI-CHORD OUT
DISPLAY	○ (LED)
DEMO	○
PROGRAM	INITIAL, MIDI, ACCOMP VOLUME, TUNING, SWITCH ASSIGN, TREMOLO SPEED
TERMINALS	LINE OUT, PHONE, MIDI (IN, OUT)
OTHERS	POWER SWITCH, MAIN VOLUME, EXPRESSION PEDAL, FOOT SWITCH
OUTPUT	40 W
SPEAKERS	20 cm × 1, 6.5 cm × 2
POWER REQUIREMENT	100 W 70 W (NORTH AMERICA AND MEXICO)
	AC 120/220/240 V 50/60 Hz AC 120 V 60 Hz (NORTH AMERICA AND MEXICO) AC 230 V 50/60 Hz (NEW ZEALAND) AC 230-240 V 50/60 Hz (EUROPE)
DIMENSIONS (W × H × D)	105.2 cm × 100.8 cm × 46.1 cm (41-13/32" × 39-11/16" × 18-5/32") (WITH MUSIC STAND)
NET WEIGHT	37 Kg (81.6 lbs)

*Specification are subject to change without notice for further improvement.

WARNING

To prevent the risk of fire, smoke, or electrical shock and to ensure safe operation, please be sure to follow the safety guidelines below.

1. At places where special caution is required, the necessary safety precautions are clearly labeled or printed, for example, on the cabinet, or on the part concerned. Please follow these safety precautions, and also those listed in the Owner's Manual.

2. Parts which have a ⚠ mark in the circuit diagram or in the parts list are essential for safety. When replacing these parts, be sure to use only the specified parts.

3. Use the specified types for internal wiring (double-insulated wiring, etc.).

4. When replacing parts on the AC primary side (power transformer, electric switch, electrical cord, noise-prevention condenser, etc.), wind the lead wire and secure it by soldering.

5. Do not let the wiring come into contact with heat-emitting devices (fuse resistor, radiator plate, etc.).

6. When replacing the wiring, make sure that it is not in contact with the unfinished or rough edge of a part.

7. When replacing the power cord (except for the plug-in type), tug it from various directions to confirm that it does not slip out of place.

8. Spacing
   If soldering was done on the AC primary circuit, confirm that the interval between the soldered terminals or between the terminal and surrounding metallic parts is at least the minimum required (Between the primary circuit and the chassis: at least 6.5 mm; between primary circuit terminals: at least 4.0 mm; between primary circuit terminals and secondary circuit terminals: at least 6.5 mm.).

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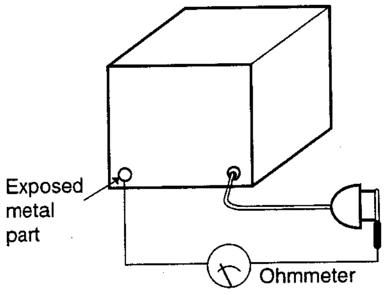
SAFETY PRECAUTION (This "safety precaution" is for the U.S.A. only)

● Safety Precaution

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only the manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc. .
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

● Insulation Resistance Test

1. Unplug the power cord and short the prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with an ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screw heads, connectors, control shafts, handle brackets, etc. . Measurements should range from 4 MΩ to infinity for all exposed parts.

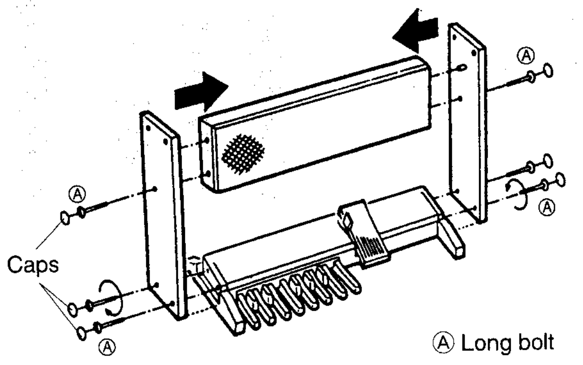


Resistance = 4MΩ to ∞

HOW TO ASSEMBLE THE ORGAN

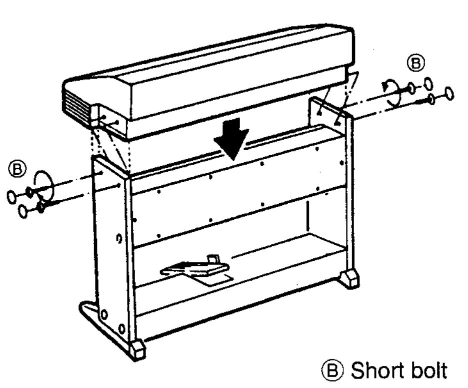
· To prevent the upper organ part from falling off the lower organ part, secure it firmly with the screws.

1 Assemble the stand part.



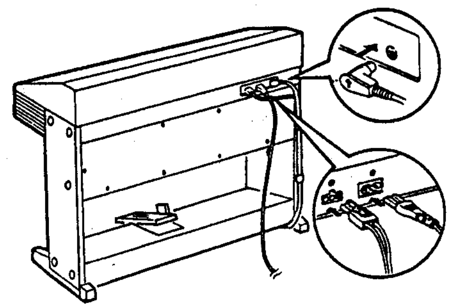
[Fig. 1]

2 Attach the upper oprgan part to the stand part.



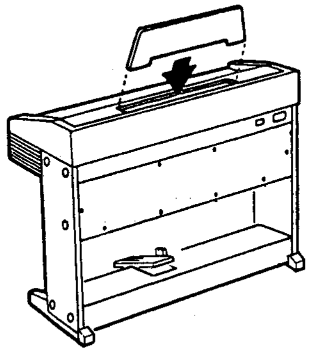
[Fig. 2]

3 Connect the power cord, speaker cord and pedal cord as shown.



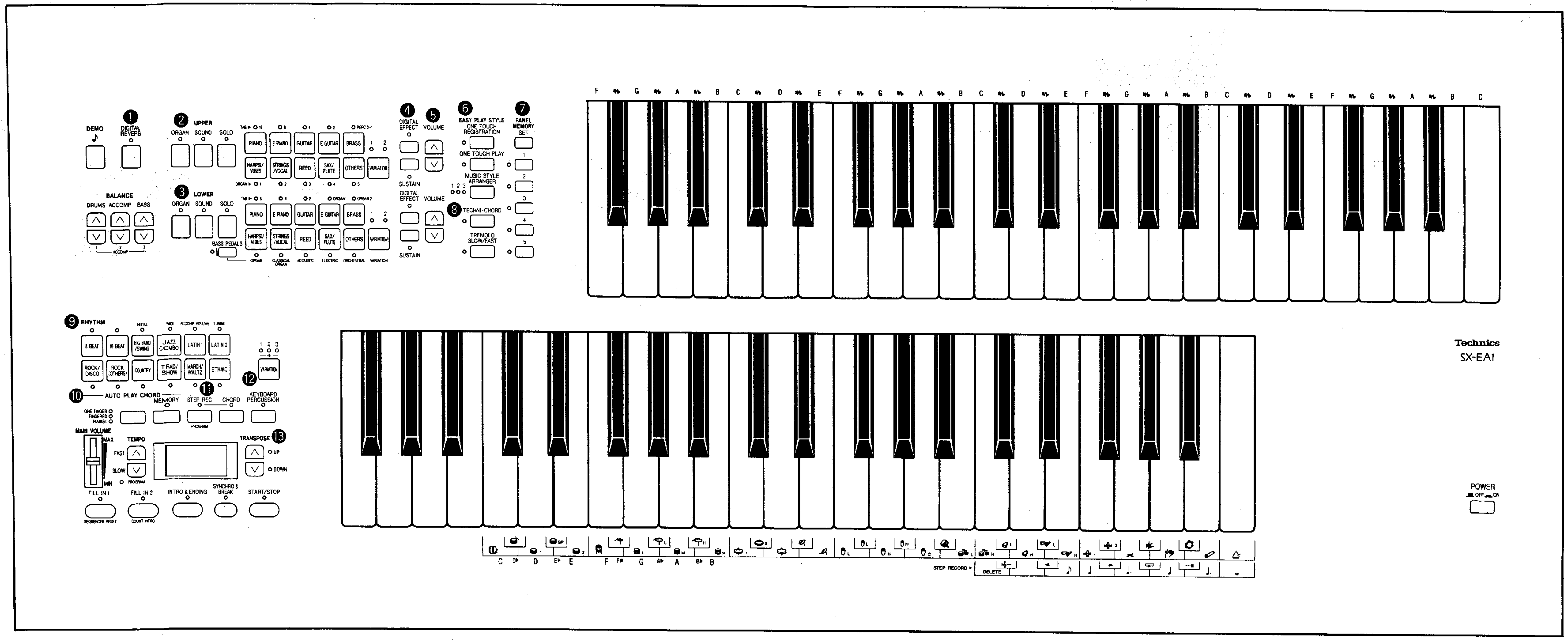
[Fig. 3]

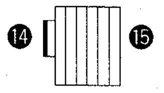
4 Insert the music stand as shown.



[Fig. 4]

ARRANGEMENT OF CONTROL PANEL


DEMO
DIGITAL REVERB
UPPER
ORGAN SOUND SOLO
PIANO E.PIANO GUITAR E.GUITAR BRASS
HARPS/VIBES STRINGS/VOCAL REED SAX/FLUTE OTHERS VARIATION
LOWER
BASS PEDALS
BALANCE
DRUMS ACCOMP BASS
DIGITAL EFFECT VOLUME
SUSTAIN
EASY PLAY STYLE
ONE TOUCH REGISTRATION
ONE TOUCH PLAY
MUSIC STYLE ARRANGER
TECHNI-CHORD
TREMOLO SLOW/FAST
PANEL MEMORY SET
RHYTHM
8 BEAT 16 BEAT BIG BAND/SWING JAZZ COMBO LATIN 1 LATIN 2
ROCK/DISCO ROCK (OTHERS) COUNTRY TRAD/SHOW MARCH/WALTZ ETHNIC VARIATION
AUTO PLAY CHORD
ONE FINGER FINGERED PIANIST
MEMORY STEP REC CHORD
KEYBOARD PERCUSSION
MAIN VOLUME
MAX MIN
TEMPO
FAST SLOW
TRANSPOSE
UP DOWN
FILL IN 1 FILL IN 2 INTRO & ENDING SYNCHRO & BREAK START/STOP
SEQUENCER RESET COUNT INTRO
STEP RECORD
DELETE
Technics
SX-EA1
POWER
OFF ON



BASIC FUNCTIONS

❶ DIGITAL REVERB
Add reverberation to the sound.

❷ UPPER
Select the sounds to be played on the upper keyboard.

❸ LOWER
Select the sounds to be played on the lower keyboard and with the pedal keyboard.

❹ Effects
The **DIGITAL EFFECT** and **SUSTAIN** effects are turned on and off for the selected upper and lower keyboard sounds.

❺ VOLUME
The volumes for the upper and lower keyboard parts are controlled with the corresponding **VOLUME** buttons. The **BASS** volume is adjusted with the **BASS** buttons in the separate **BALANCE** section.

❻ EASY PLAY STYLE
A simple operation provides automatic selection of the sounds, effect and various other panel settings which are suitable for the registration you chose.

❼ PANEL MEMORY
Set up the sounds and effects for the upper, lower and pedal keyboards, and then store them in these 5 buttons for instant recall as you play. You can expand the range of the storable settings to include rhythm selection, tempo setting and more.

❽ TECHNI-CHORD
Chord notes played on the lower keyboard are added to melody notes played on the upper keyboard. Choose from four harmonic styles.

❾ RHYTHM
Select one of the various preset rhythms and start it instantly with the **START/STOP** button. Other features which enhance the **RHYTHM** unit are **SYNCHRO & BREAK, INTRO & ENDING, FILL IN** and a foot switch. The volume is adjusted with the **DRUMS** buttons in the **BALANCE** section.

⑩ **AUTO PLAY CHORD**
Add an automatic accompaniment to your selected rhythm. A full chord and a bass note are automatically produced when you play a key on the lower keyboard. Play major, minor, seventh or minor seven chords and the bass note just by pressing one key. The volume for each part of the **AUTO PLAY CHORD (ACCOMP, BASS, DRUMS)** is adjusted with the respective buttons in the separate **BALANCE** section.

⑪ **STEP REC**
Record a chord progression, etc. to be used with the automatic accompaniment.

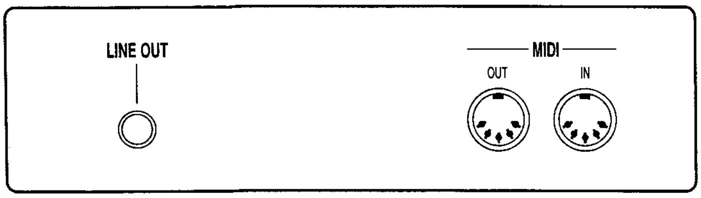
⑫ **KEYBOARD PERCUSSION**
One press of the **KEYBOARD PERCUSSION** button transforms your lower keyboard into a whole band of percussive instruments and special sounds. The keys are picture-coded for quick and easy selection.

⑬ **TRANSPOSE**
C is the standard setting, but you can raise or lower the key of the entire organ with the two buttons. The transposed key is shown on the normal mode display.

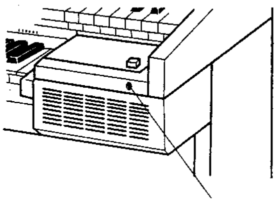
⑭ **Glide control**
Lower the pitch of the organ by one half-tone or whole tone by pressing the left foot switch. This is used, for example, to get the Hawaiian guitar effect.

⑮ **Expression pedal**
Increase and decrease the loudness of all the organ sound as you play to add expression to the music.

TERMINALS



(On the rear panel)



Headphone terminal

LINE OUT (output level 1.5 Vrms, 600 Ω)
By connecting an external high-power amplifier, the sound can be reproduced at a high volume.

MIDI (Musical Instrument Digital Interface)
MIDI is the standard specification that enables connection to equipment such as synthesizers and personal computers.

IN : The terminal that receives data from external equipment.
OUT : The terminal that transmits data from this instrument to external equipment.

- Use a 5-pin DIN cord (less than 15 m long) for these connections.

Headphone terminall (∩)
For silent practice, headphones (option) may be used. When plugged in, this instrument's speaker system is automatically switched off, and the sound is heard only through the headphones.

INITIAL SETTING

The initial setting function is used to return to the original factory settings, and to reset the customer settings and misoperations.

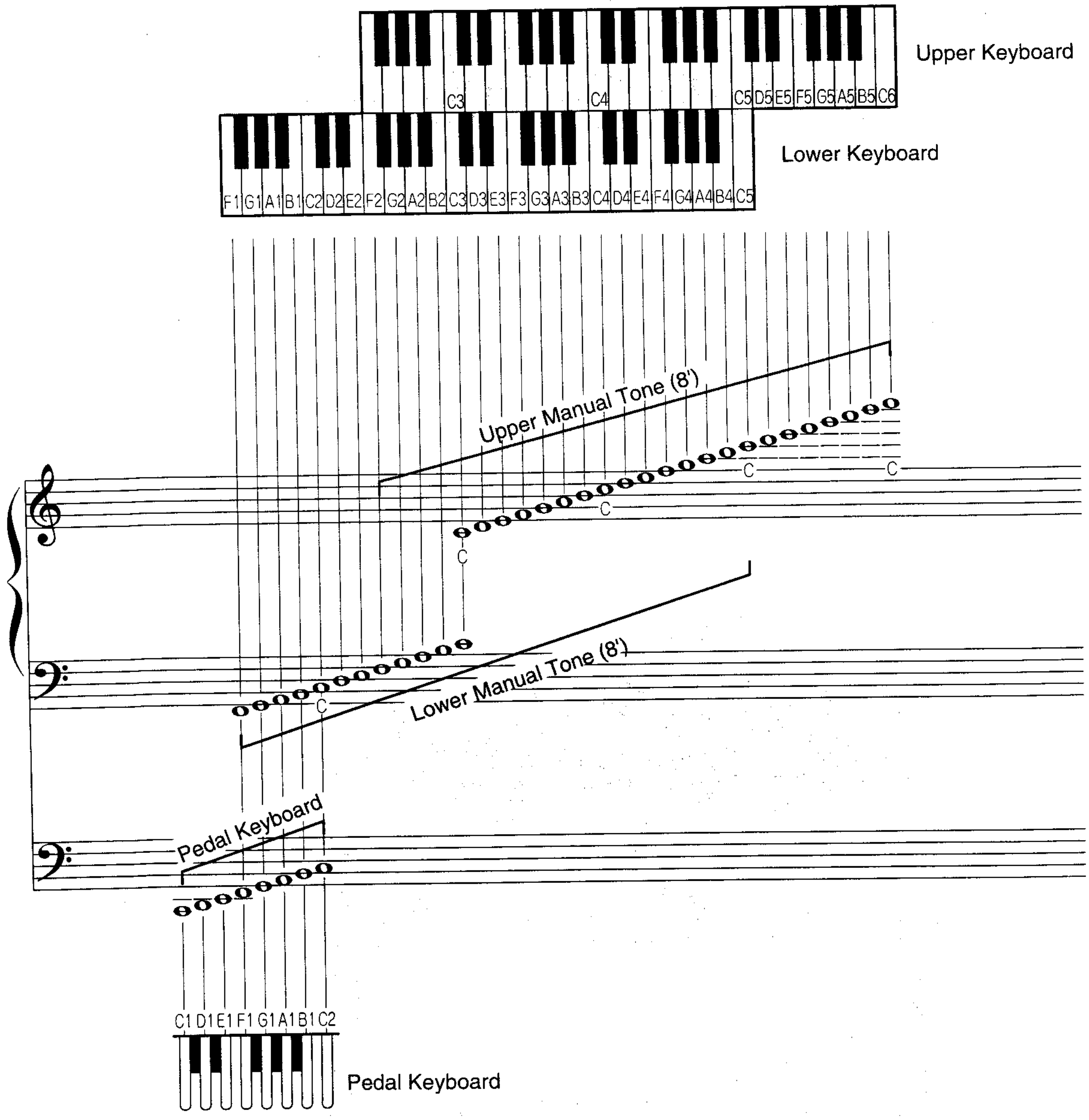
1. Press the **POWER** button to turn off the instrument.
2. While pressing the three lower left buttons in the **RHYTHM** section at the same time, turn the **POWER** button on again.

NOTE:
All stored data in the **STEP REC** and other settings are initialized with this operation.

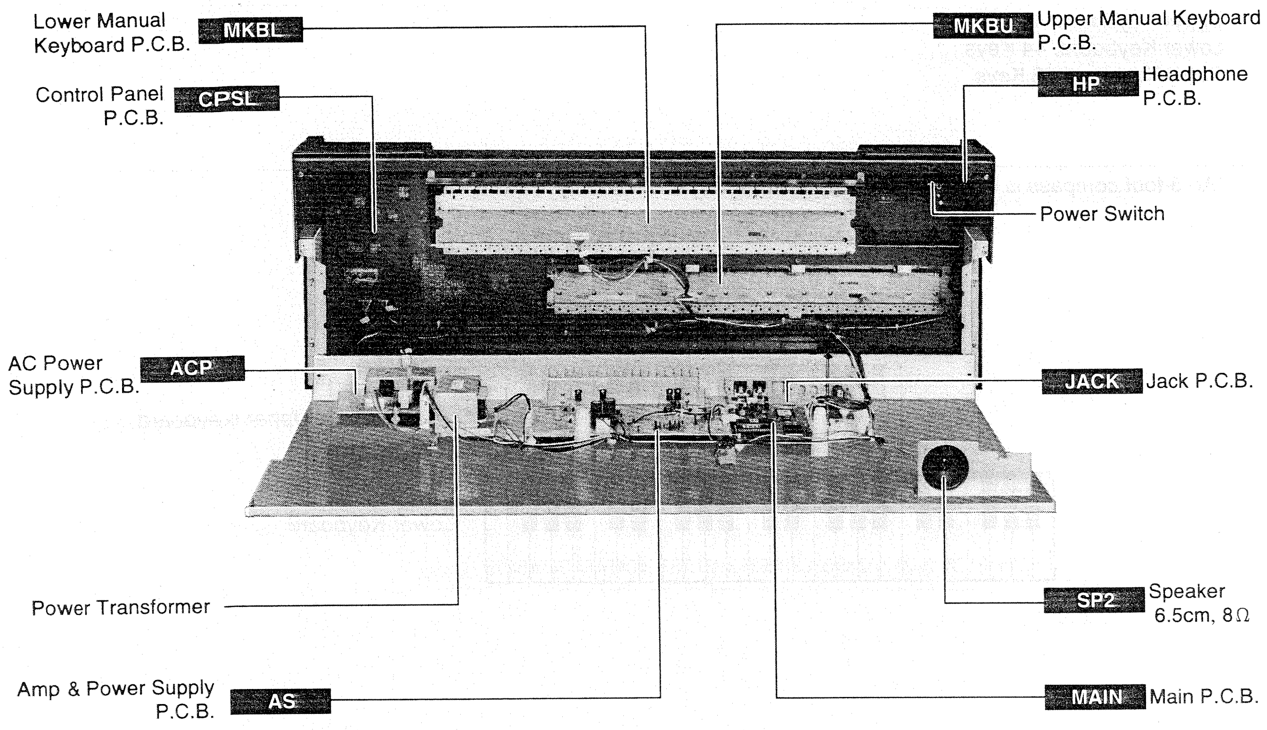
KEYBOARD RANGES

Upper Keyboard: 44 Keys
Lower Keyboard: 44 Keys
Pedal Keyboard: 13 Keys

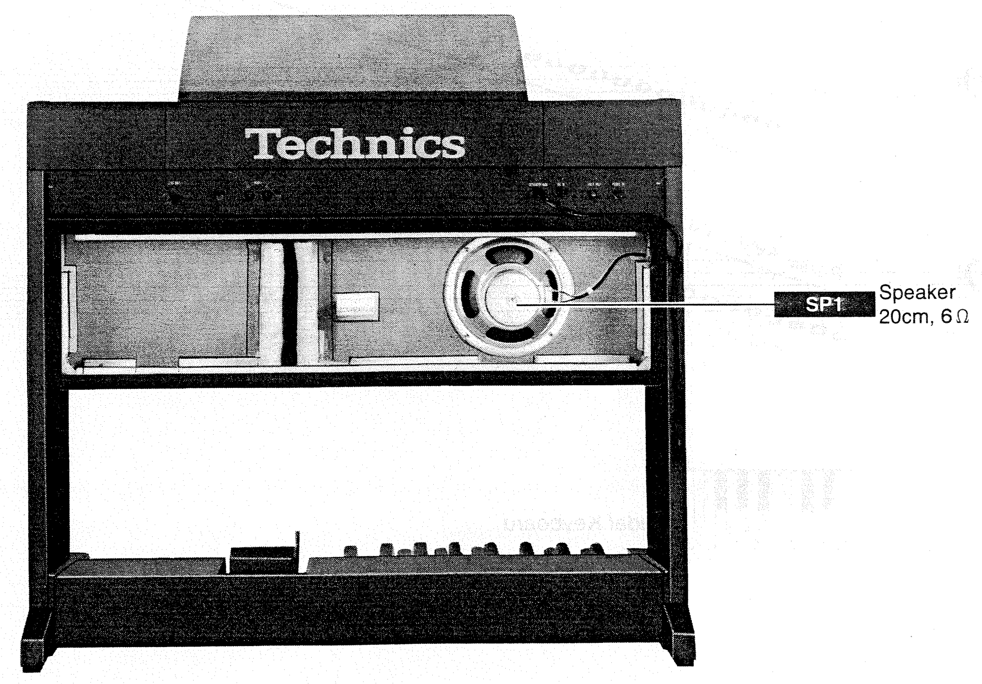
*An 8-foot compass is used for each keyboard


Upper Keyboard
C3
C4
C5 D5 E5 F5 G5 A5 B5 C6
Lower Keyboard
F1 G1 A1 B1 C2 D2 E2 F2 G2 A2 B2 C3 D3 E3 F3 G3 A3 B3 C4 D4 E4 F4 G4 A4 B4 C5
Upper Manual Tone (8')
C
C
C
C
Lower Manual Tone (8')
C
Pedal Keyboard
C1 D1 E1 F1 G1 A1 B1 C2
Pedal Keyboard

PARTS LOCATION


Lower Manual Keyboard P.C.B.
MKBL
Control Panel P.C.B.
CPSL
MKBU
Upper Manual Keyboard P.C.B.
HP
Headphone P.C.B.
Power Switch
AC Power Supply P.C.B.
ACP
JACK
Jack P.C.B.
Power Transformer
SP2
Speaker 6.5cm, 8Ω
Amp & Power Supply P.C.B.
AS
MAIN
Main P.C.B.

[Photo-1]

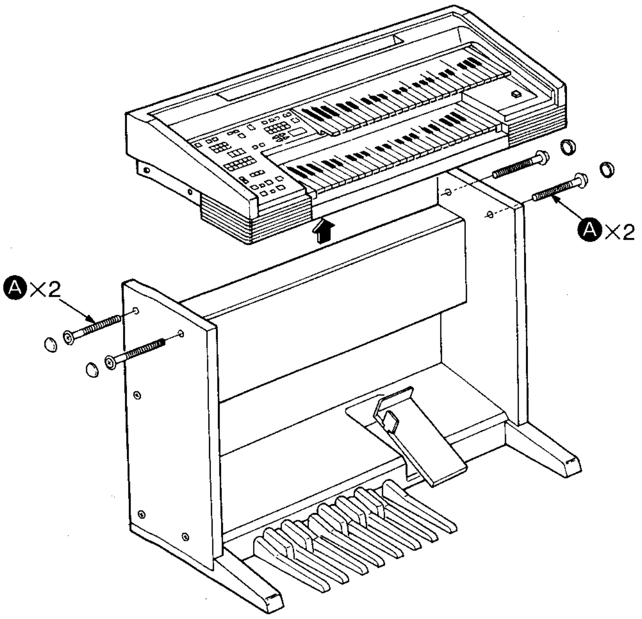

Technics
SP1
Speaker 20cm, 6Ω

[Photo-2]

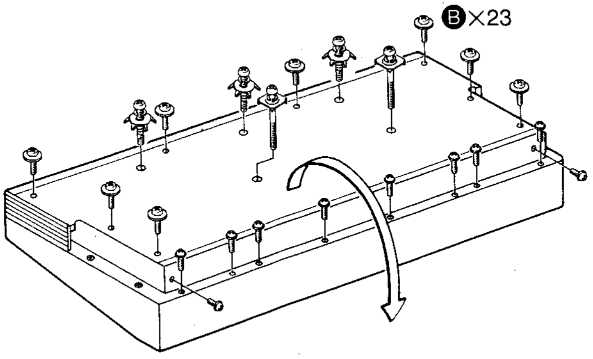
DISASSEMBLY INSTRUCTIONS

1 Removing the upper organ cabinet

1. Remove the upper organ part mounting bolts (🅐 4 pcs.) and dismount the upper organ part from the stand.
2. Turn the upper organ part upside down as shown in Fig. 6, and remove the screws from the cabinet (🅑 23 pcs.).
3. Lift the bottom board of the cabinet, and open to the rear side of the cabinet.



[Fig.5]



[Fig.6]

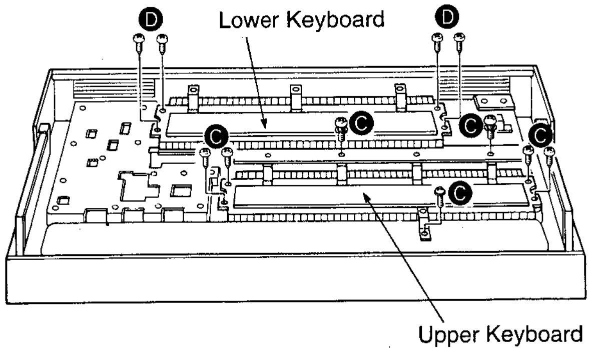
2 Removing the keyboard

Upper keyboard

1. Open the upper organ cabinet (see Step 1).
2. Remove the upper keyboard securing screws (🅒 7 pcs.). The upper keyboard can then be removed.

Lower keyboard

1. Open the upper organ cabinet (see Step 1).
2. Remove the lower keyboard securing screws (🅓 4 pcs.). The lower keyboard can then be removed.

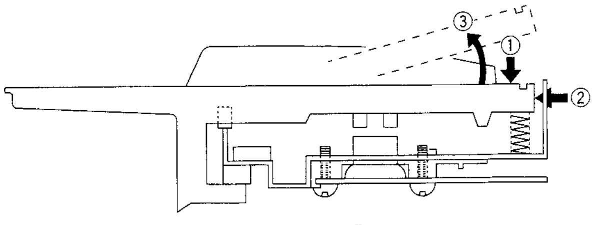


[Fig.7]

3 Removing the keys (s)

1. Remove the keyboard (see Step 2).
2. Press downward on the rear of the key (Fig.8-①).
3. While pressing downward on the rear of the key, push the key forward and release it from the chassis (Fig.8-②.).
4. Lift the key and remove it from the cahssis (Fig.8-③.).

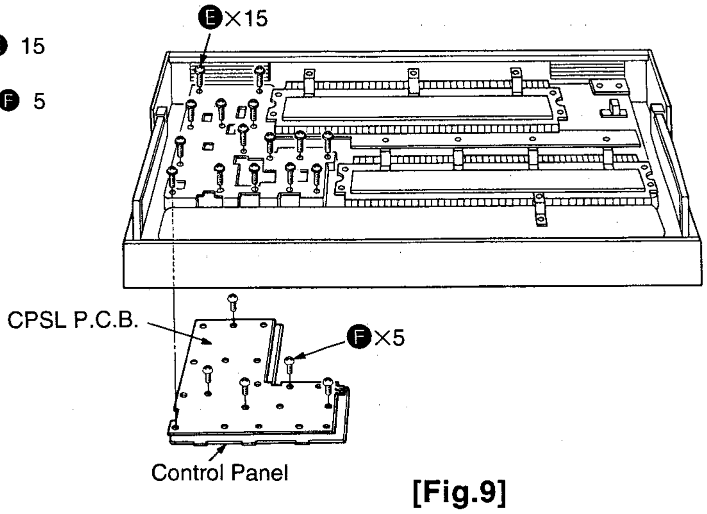
NOTE:
To remove a black key, the white key to either side of it should be removed first.



[Fig.8]

4 Removing the control panel

1. Open the upper organ cabinet (see Step 1).
2. Remove the control panel mounting screws (🅔 15 pcs.). The control panel can then be removed.
3. Remove the CPSL P.C.B. mounting screws (🅕 5 pcs.). The CPSL P.C.B. can then be removed.



[Fig.9]

5 Removing the printed circuit boards

- Open the upper organ cabinet (see Step 1).

ACP P.C.B.

1. Remove the ACP P.C.B. mounting screws on the rear accessory panel (🅖 2 or 3 pcs.).
2. Remove the ground wire holding screw (🅗 1 pc.).
3. Release the 5 claws of the P.C.B. holder to remove the ACP P.C.B.

AS P.C.B.

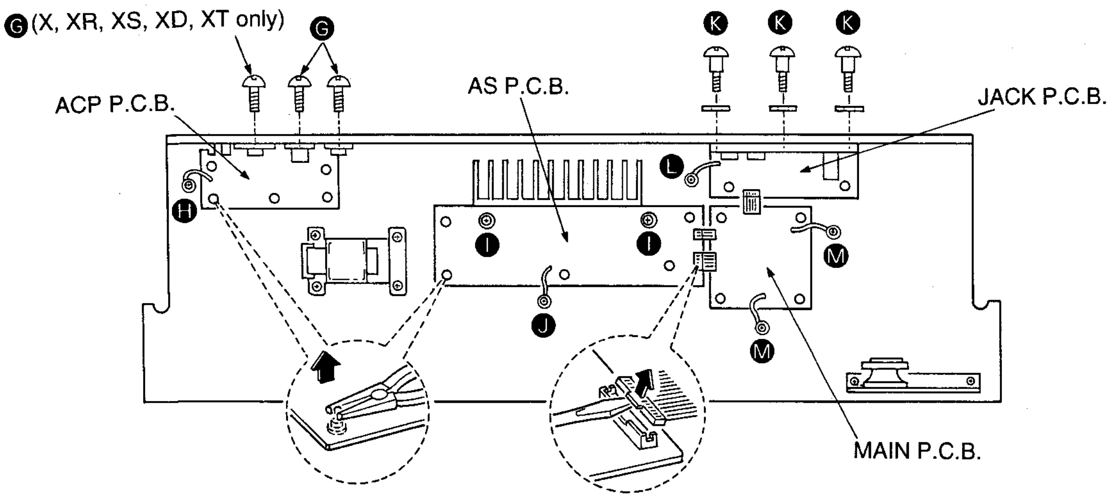
1. Remove the connectors which join the 2 P.C.B.s with a screwdriver as shown in the figure.
2. Remove the AS P.C.B. mounting screws (🅘 2 pcs.).
3. Remove the ground wire holding screw (🅙 1 pc.).
4. Release the 5 claws of the P.C.B. holder to remove the AS P.C.B.

JACK P.C.B.

1. Remove the connector which joins the 2 P.C.B.s with a screwdriver as shown in the figure.
2. Remove the JACK P.C.B. mounting screws on the rear accessory panel (🅚 3 pcs.).
3. Remove the ground wire holding screw (🅛 1 pc.).
4. Release the 2 claws of the P.C.B. holder to remove the JACK P.C.B.

MAIN P.C.B.

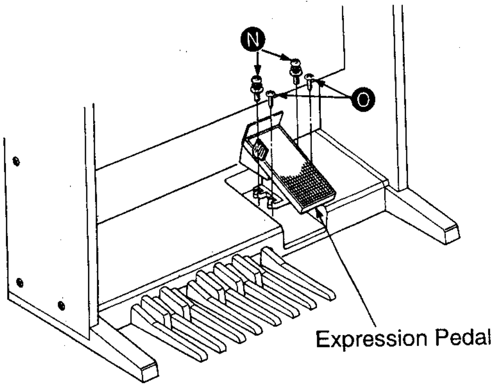
1. Remove the connectors which join the 3 P.C.B.s with a screwdriver as shown in the figure.
2. Remove the ground wire holding screws (🅜 2 pcs.).
3. Release the 4 claws of the P.C.B. holder to remove the MAIN P.C.B.



[Fig.10]

6 Removing the expression pedal

- Remove the expression pedal mounting screws (Ⓝ 2 pcs. and Ⓞ 2pcs.).


Ⓝ
Ⓞ
Expression Pedal

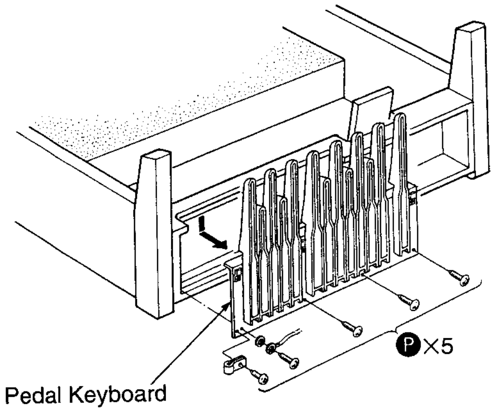
[Fig.11]

7 Removing the pedal keyboard

1. Gently turn over the instrument so that the rear of the organ is facing down.
2. Remove the pedal keyboard mounting screws (Ⓟ 5 pcs.).

Caution

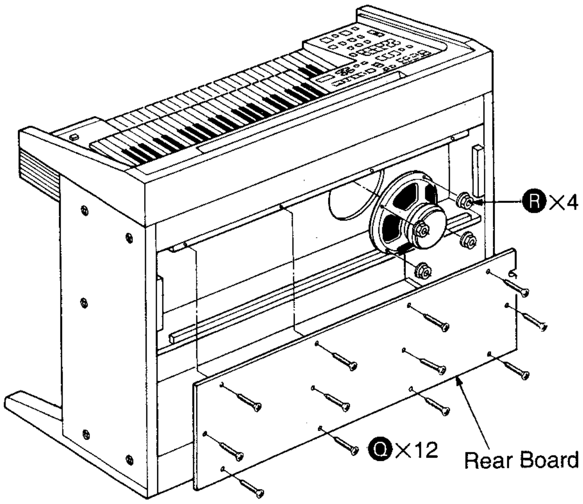
- Take care not to scratch the organ when turning it over.


Ⓟ×5
Pedal Keyboard

[Fig.12]

8 Removing the speaker

1. Remove the rear board mounting screws (Ⓠ 12 pcs.).
2. Remove the speaker mounting nuts (Ⓡ 4 pcs.).

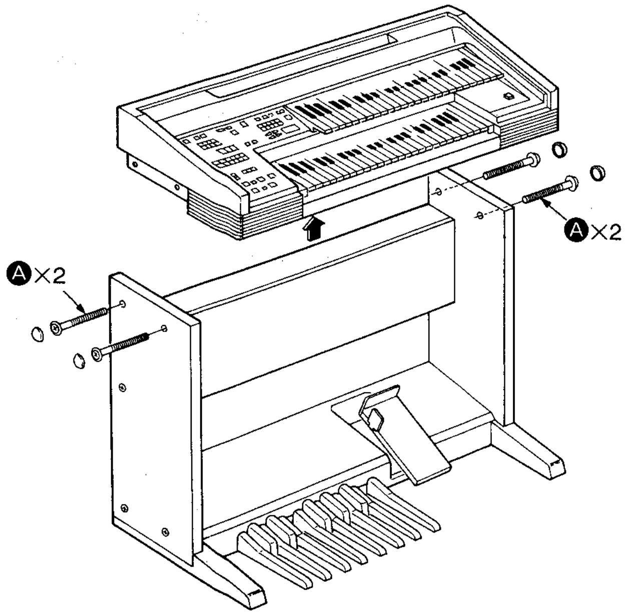

Ⓡ×4
Ⓠ×12
Rear Board

[Fig.13]

HOW TO USE THE SERVICING SPACER (not included)

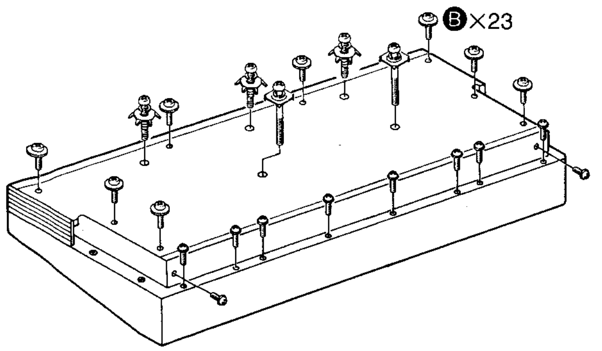
- When servicing (for example, the P.C.B.), affix the spacers as shown in the figure. (Spacer Part No. **SZZE2000**)

1 Remove the upper organ part mounting bolts (Ⓐ 4 pcs.) and dismount the upper organ part from the stand.



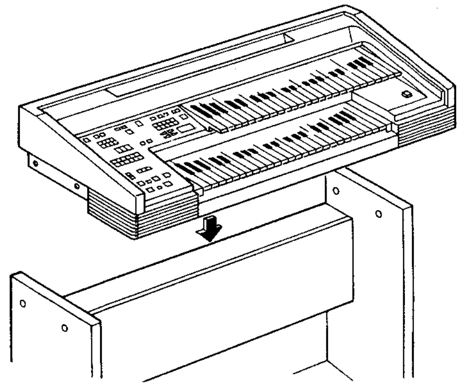
[Fig.14]

2 Turn the upper organ part upside down as shown in Fig. 15, and remove the screws from the cabinet (Ⓑ 23 pcs.).



[Fig.15]

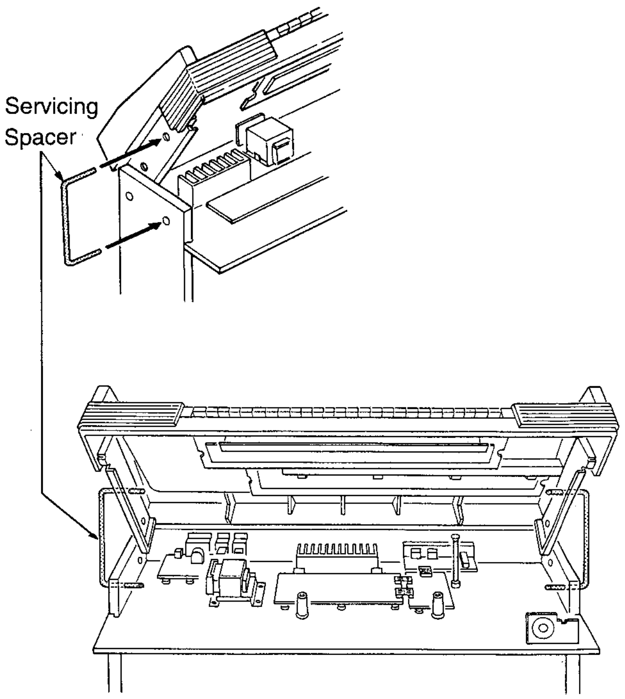
3 Place the upper organ part on the stand, making sure to seat it firmly on the stand.



[Fig.16]

4 Open the control panel with the cabinet gently and affix the two spacers as shown in Fig. 17.

Note:
Do not apply too much pressure to the cabinet, since the upper organ part and the stand part are joined only the two spacers.



[Fig.17]

SYMPTOMS WHICH APPEAR TO BE SIGNS OF TROUBLE

The following changes in performance may occur in Technics organ but do not indicate trouble.

	Phenomenon	Remedy
Sounds and effects	The buttons, keys, etc. malfunction.	• Turn off the **POWER** button once, then turn it on again. If this procedure is not successful, turn off the **POWER** button once. Then, while pressing the three lower left buttons in the **RHYTHM** section (**ROCK/DISCO**, **ROCK [OTHERS]** and **COUNTRY**) at the same time, turn the **POWER** button on again. (Note that, in this case, all programmable settings, functions and memories return to their factory-preset status.)
	No sound is produced when the keys are pressed.	• The **MAIN VOLUME** is at the minimum setting. Adjust the volume with the **MAIN VOLUME** control. • The volumes for the selected parts are set to the minimum levels. Use the **VOLUME** buttons to set the volumes of the relevant parts to appropriate levels.
	The volume is very low when the keyboard is played.	• Connect the speaker cord so that the plug is fully inserted into the terminal.
	Only percussive instrument sounds are produced when the lower keyboard is played.	• The **KEYBOARD PERCUSSION** button is on.
	The foot switch does not operate properly.	• Any functional on and off operation other than the factory presets are storable in the foot switch. Store your favorite function to turn it on and off.
	The sound of the lower keyboard does not stop.	• The **MEMORY** button of the **AUTO PLAY CHORD** is on. Turn off the **MEMORY** button.
Rhythm	The rhythm does not start.	• The **DRUMS** volume is set to the minimum level. Use the **BALANCE** buttons to set the **DRUMS** volume to an appropriate level. • CLOCK is set to MIDI. Set CLOCK to INTERNAL.
AUTO PLAY CHORD	No sound is produced for the automatic accompaniment.	• The **ACCOMP** volume is set to the minimum level. Use the **BALANCE** buttons to set the **ACCOMP** volume to an appropriate level.
	No sound is produced for the automatic accompaniment, or only the sounds of some parts are produced.	• An **ACCOMP** part does not sound if its corresponding volume is set to the minimum level. Use the **ACCOMP 1-3** (**BALANCE**) buttons to set the **ACCOMP** volume to appropriate levels.
	Chord storage is not possible (**STEP RECORD**).	• The remaining memory capacity is 0. Erase the memory.
Other	Noise from a radio or TV can be heard.	• This sometimes occurs when electrical equipment such as a radio or TV is used near the instrument. Try moving such electrical equipment further away from the instrument. • The sound may be coming from a nearby broadcast station or amateur radio station. If the sound is bothersome, consult your dealer or service center.
	The cabinet becomes warm during use.	• This instrument has a built-in power source that heats the cabinet to some degree. This is not an indication of trouble.

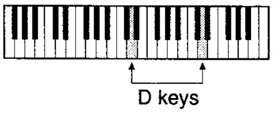
ABOUT THE SELF-DIAGNOSTIC FUNCTION

This model has some self-diagnostic capabilities. When set to the self-diagnostic mode, operation of various components can be verified by following the procedures in the chart below.

<table>
<tr><th>No.</th><th>PCB</th><th>TEST MODE</th><th>Procedure</th></tr>
<tr><td rowspan="2">1</td><td rowspan="2">MAIN</td><td>RAM (IC4, 5), ROM (IC7, 8) check</td><td>1. Connect the CHECKING DEVICE (refer to page I-16) to CN 1 on the MAIN P.C.B., and turn on the CHECKING DEVICE switch.
2. Turn on the power switch.</td></tr>
<tr><td colspan="2">When the power switch is turned on, the LED of the CHECKING DEVICE flashes 8 times. The first 4 flashes are for the RAM check, and the latter 4 flashes are for the ROM check. The order of the LED flashes corresponds to the respective IC numbers as shown below. If an IC is defective, the corresponding flash time is longer.

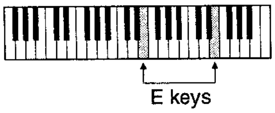
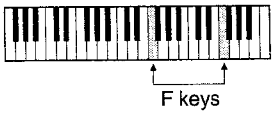
Examples — RAM: 1 2 3 4 — ROM: 1 2 3 4
1. RAM OK, ROM OK → ● ● ● ●   ● ● ● ●
2. RAM OK, ROM (IC7) defective → ● ● ● ●   ▬ ● ● ●
3. RAM (IC4) defective, ROM OK → ▬ ● ● ●   ● ● ● ●
IC4 IC5   IC7 IC8

NOTE : ● indicates short flash time = OK
▬ indicates long flash time = Defective</td></tr>
<tr><td rowspan="2">2</td><td rowspan="2">CPSL</td><td>Control panel CPU check</td><td>1. Connect the CHECKING DEVICE to CN 1 on the MAIN P.C.B.(The Checking Device switch should be off).
2. Press and hold the two D keys shown below, and then turn on the power switch.

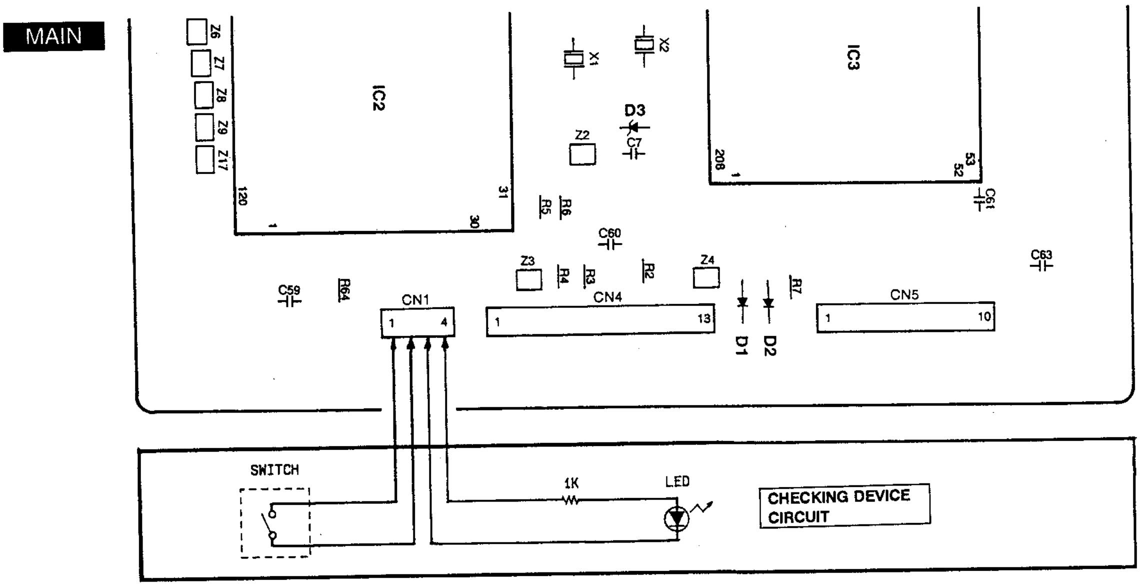
Lower Keyboard  </td></tr>
<tr><td colspan="2">When the power switch is turned on, the LED of the CHECKING DEVICE flashes 4 times. The order of the LED flashes corresponds to the CPU (IC) on the respective P.C.B.s as shown below. If an IC is defective, the corresponding flash time is longer.

1 2 3 4
1. OK → ● ▬ ▬ ▬
2. CPU defective → ▬ ▬ ▬ ▬
CPU

NOTE : ● indicates short flash time = OK
▬ indicates long flash time = Defective</td></tr>
</table>

<table>
<tr><th>No.</th><th>PCB</th><th>TEST MODE</th><th>Procedure</th></tr>
<tr><td>3</td><td>MAIN</td><td>Wave ROM check
MAIN : IC11</td><td>Press and hold the two E keys shown below, and then turn on the power switch.
Lower Keyboard  </td></tr>
<tr><td></td><td></td><td>When set to the self-diagnostic mode, the Wave ROM outputs a sine wave. The Wave ROMs correspond to the keyboard keys as shown in the diagram to the right. When a key is pressed, the corresponding sine wave sound is produced. If no sound is produced, or if the sound is distorted, the Wave ROM corresponding to that key is defective.</td><td>• The key number indicates the Wave ROM number. (1:IC11)<table><tr><th>KEY
UPPER CONDUCTOR</th><th>C C# D D# E F F# G A A# B</th></tr><tr><td>Upper Organ</td><td>1 ◀———▶ 1</td></tr></table></td></tr>
<tr><td>4</td><td>CPSL</td><td>LED &amp; SW check</td><td>Press and hold the two F keys shown below, and then turn on the power switch.
Lower Keyboard  </td></tr>
<tr><td></td><td></td><td colspan="2">All the LEDs turn off after lighting once. Confirm that all the LEDs light.</td></tr>
</table>

■ Connection between serving CHECKING DEVICE and MAIN P.C.B.


MAIN
Z6
Z7
Z8
Z9
Z17
IC2
120
1
30
31
X1
X2
D3
Z2
C7
R5
R6
IC3
208
1
53
52
C61
C60
Z3
Z4
R4
R3
R2
R7
C59
R64
CN1
1
4
CN4
1
13
CN5
1
10
C63
D1
D2
SWITCH
1K
LED
CHECKING DEVICE CIRCUIT

MIDI IMPLEMENTATION CHART

Organ [SX-EA1] **(Transmitted)**

Function		UPPER ORGAN,SOUND,SOLO	LOWER ORGAN,SOUND,SOLO (KBP)	BASS	ACCOMP 1,2,3	DRUMS	CONTROL	Remarks
Basic Channel	Default	1	2	3	8 (1),9 (2),10 (3)	16	15	
	Changed	×	×	×	×	×	×	
Mode	Default	3	3	3	3	3	3	OMNI OFF,POLY MODE
	Messages	×	×	×	×	×	×	
	Altered	–	–	–	–	–	–	
Note Number		48-102	36-90	0-127	0-127	0-127	–	Changes depending on the position of the transpose control
	True voice	–	–	–	–	–	–	
Velocity	Note ON	×	×	○*	○*	○*	–	
	Note OFF	×(9nH:v=0)	×(9nH:v=0)	×(9nH:v=0)	×(9nH:v=0)	×(9nH:v=0)	–	
After Touch	Key's	×	×	×	×	×	×	
	Ch's	×	×	×	×	×	×	
Pitch Bend		×	×	○*	○*	×	×	
Control Change	0.32	○	○	○	○	○	×	bank select MSB,LSB
	1	×	×	○*	○*	×	×	modulation
	7	○	○	○	○	○	×	volume (part)
	11	×	×	×	×	×	○	expression pedal
	64	○	○	○	×	×	×	sustain
	80	×	○	×	×	×	×	auto play chord
	82	×	×	×	×	○	×	intro, fill in, ending
	91	–	–	–	–	–	○	reverb
	92	○**	○**	×	×	×	×	tremolo
	93	○***	○***	○	○	×	×	digital effect
Prog Change		○	○	○	○	○	×	Changes depending on program change mode.
	True #	–	–	–	–	–	–	
System exclusive		×						
System common	Song Pos	○						
	Song Sel	×						
	Tune	×						
System Real Time	Clock	○						
	Commands	○×						start/stop,continue
Aux Messages	Local ON/OFF	×	×	×	×	×	–	
	All notes OFF	×	×	×	×	×	–	
	Active Sense	○						
	Reset	×						
Notes		○*·················AUTO PLAY CHORD pattern only ○**················ORGAN part only ○***·············SOUND, SOLO part only ○×*············Whether or not the data for each of these items is transmitted can be set.						

Mode 1: OMNI ON, POLY　Mode 2: OMNI ON, MONO　○:Yes
Mode 3: OMNI OFF, POLY　Mode 4: OMNI OFF, MONO　×:No

Organ [SX-EA1] **(Recognized)**

Function		UPPER SOUND	LOWER SOUND	BASS	UPPER SOLO	LOWER SOLO	UPPER ORGAN	LOWER ORGAN	CONTROL	DRUMS (KBP)	Remarks
Basic Channel	Default	1	2	3	4	5	13	14	15	16	
	Changed	×	×	×	×	×	×	×	×	×	
Mode	Default	3	3	3	3	3	3	3	3	3	OMNI OFF,POLY MODE
	Messages	×	×	×	×	×	×	×	×	×	
	Altered	–	–	–	–	–	–	–	–	–	
Note Number		0-127	0-127	0-127	0-127	0-127	0-127	0-127	–	0-127	Changes depending on the position of the transpose control and drums type
	True voice	0-127	0-127	0-127	0-127	0-127	0-127	0-127	–	0-127	
Velocity	Note ON	○	○	○	○	○	×	×	–	○	
	Note OFF	×	×	×	×	×	×	×	–	×	
After Touch	Key's	×	×	×	×	×	×	×	–	×	
	Ch's	×	×	×	×	×	×	×	–	×	
Pitch Bend		○	○	○	○	○	×	×	×	×	
Control Change	0.32	○	○	○	○	○	○	○	×	○	bank select MSB,LSB
	1	○	○	○	○	○	×	×	×	×	modulation
	7	○	○	○	○	○	○	○	×	○	volume(part)
	11	×	×	×	×	×	×	×	○	×	expression pedal
	64	○	○	○	○	○	○	○	×	×	sustain
	80	×	○	×	×	×	×	×	×	×	auto play chord
	82	×	×	×	×	×	×	×	×	○	intro, fill in, ending
	91	×	×	×	×	×	×	×	○	×	reverb
	92	×	×	×	×	×	○	○	×	×	tremolo
	93	○	○	○	○	○	×	×	×	×	digital effect
Prog Change		○	○	○	○	○	○	○	×	○	Changes depending on program change mode
	True #	0-127	0-127	0-127	0-127	0-127	0-127	0-127	–	0-127	
System exclusive		×									
System common	Song Pos	○									
	Song Sel	×									
	Tune	×									
System Real Time	Clock	○									
	Commands	○×*									start/stop,continue
Aux Messages	Local ON/ OFF	×	×	×	×	×	×	×	–	×	
	All notes OFF	○	○	○	○	○	○	○	_	○	
	Active Sense	○									
	Reset	×									
Notes		○×*…………Whether or not the data for each of these items is transmitted can be set.									

Mode 1: OMNI ON, POLY Mode 2: OMNI ON, MONO ○:Yes
Mode 3: OMNI OFF, POLY Mode 4: OMNI OFF, MONO ×:No

PRECAUTIONS BEFORE SERVICING

■ Precautions for measuring of the output waveforms.

1. The waveform was measured with a “National Digital Storage Oscilloscope VP-5730A”. Therefore the waveforms of musical tone signals shown may differ somewhat due to the difference in the timing of triggering.
2. Since the 1/10 test probe is used, the indicated voltage value on the bottom part of each waveform photo is 1/10 of the actual value (e.g. 0.2 V/cm should be 2.0 V/cm).
3. To measure the waveforms, first set this unit to the self-diagnostic mode (refer to page I-18, No. 4). The Wave ROM output will then be output as a sine wave to facilitate the servicing check.

■ Important safety notice:

Components identified by a ⚠ mark have special characteristics impotant for safety.
When replacing any of these components, use only manufacture's specified parts.

■ Symbolic Marks

The symbolic marks for resistors and capacitors which used in this circuits are classified as following TABLE-1 and TABLE-2.

1. RESISTORS
   - Resistors without symbolic mark are FIXED CARBON FILM RESISTORS (ERD-type).
   - All resistors are 1/4 WATT, ±5 % TOLERANCE unless otherwise designated in schematic diagrams.

(TABLE-1)

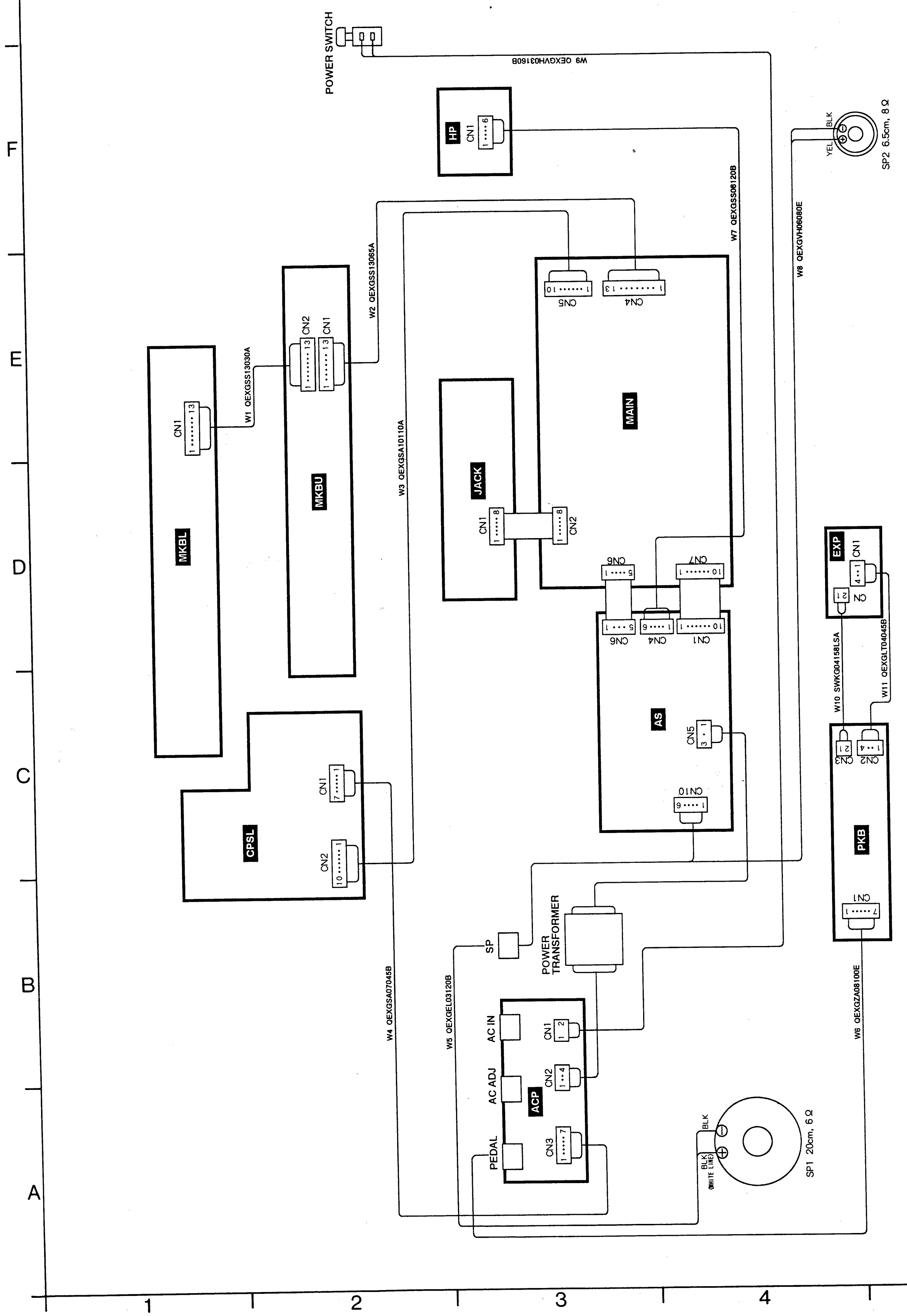
SYMBOL	SPECIFICATION	SYMBOL	SPECIFICATION
Ⓕ	Fixed Carbon Film Resistors “FLAME-PROOF” (ERD—F—type)	Ⓕ	Fixed Metal Film Resistors “FLAME-PROOF” (ERX—type)
Ⓕ	Fixed Wire Wound Resistors “FLAME-PROOF” (ERF—type)	🄵	Fuse Type Fixed Metal Oxide Film Resistors “FLAME-PROOF” (ERQ—type)
Ⓕ	Fixed Metal Oxide Film Resistors “FLAME-PROOF” (ERG—type)	🄵	Fuse Type Fixed Carbon File Resistors “FLAME-PROOF” (ERD2FC—type)
Ⓖ	Fixed Metal Film Resistors (Precision and High Stability) (ERO—type)		

2. CAPACITORS
   - Capacitors without symbolic mark are POLYESTER CAPACITORS. (ECQM-type, ECQG-type, ±10 % Tolerance)
   - Polarized capacitors without symbolic mark are Aluminum Electrolytic Capapcitors. (ECEA-type, ±20 % Tolerance)

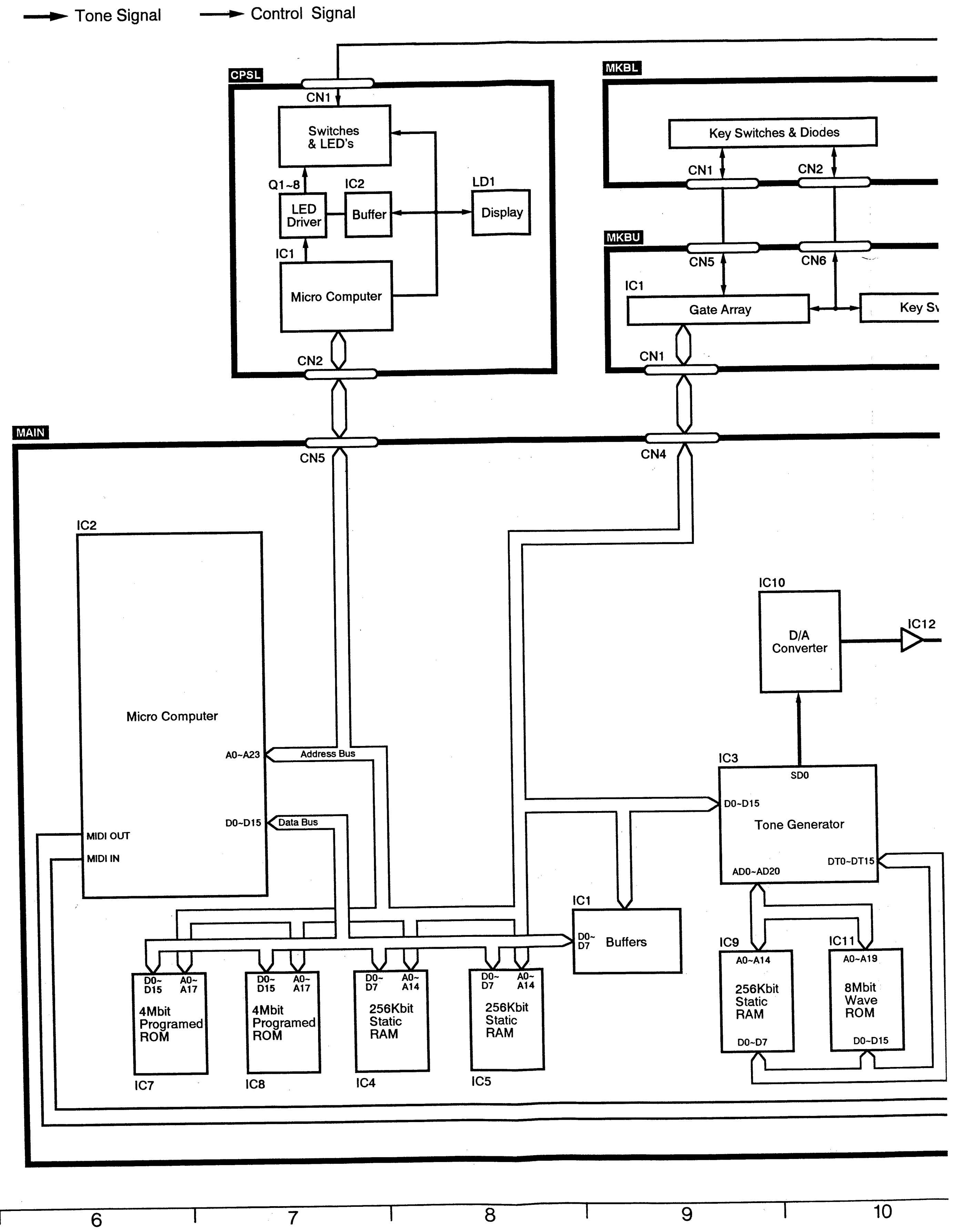
(TABLE-2)

SYMBOL	SPECIFICATION	TYPE
Ⓝ	Non-Polarized Electrolytic Capacitors	ECEA_KN_type
Ⓨ	Non-Polarized Electrolytic (for Network system)	ECEA_Y_type
Ⓣ	Tantalum Solid Electrolytic Capacitors	ECS_type
(TF)	Metalized Plastic Film Capacitors (TF Series)	ECQV_type
○	Temperature Compensating Ceramic Capacitors	ECC_type
	High-Dielectric Constant Ceramic Capacitors	ECK_type ECR_type
	Axial Lead Ceramic Capacitors	ECB_type
	Metalized Polyester Film Capacitors for Across the Line	ECQ_EW_type
	Aluminum Electrolytic Capacitors for Smoothing Circuit	ECES_type
	Multilayer Ceramic Chip Capacitors	ECUV_type

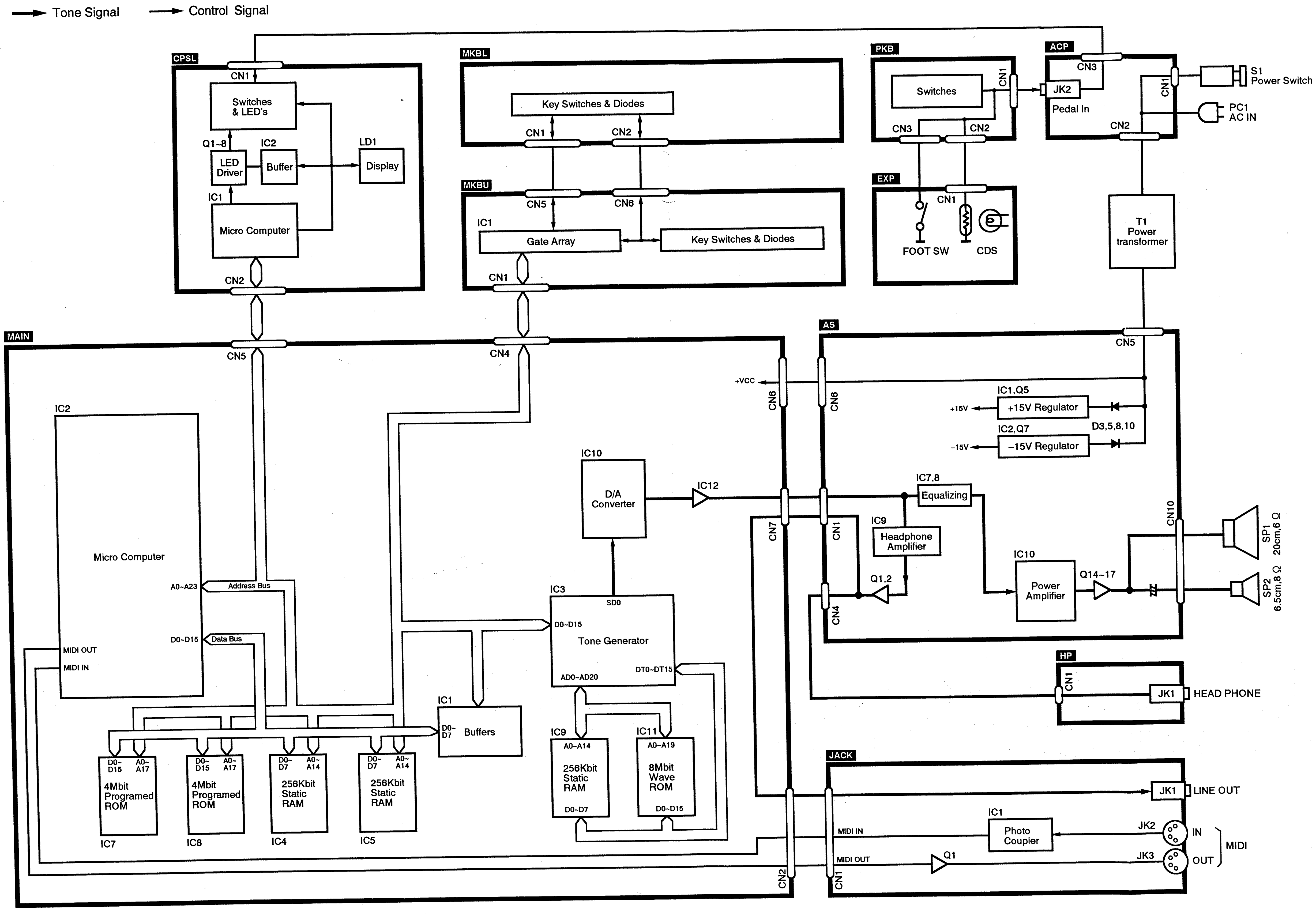
WIRING CONNECTION Diagram


POWER SWITCH
W9 OEXGVH03160B
HP
CN1
SP2 6.5cm, 8Ω
BLK
YEL
W7 OEXGSS08120B
W8 OEXGVH06080E
W2 OEXGSS13065A
W1 OEXGSS13030A
CN2
CN1
CN5
CN4
MAIN
MKBL
MKBU
JACK
W3 OEXGSA10110A
CN1
CN2
CN6
CN7
CN6
CN4
CN1
AS
CN5
CN10
EXP
CN1
CN
W10 SWKG04158LSA
W11 OEXGLT04045B
CN3
CN2
PKB
CN1
CPSL
CN1
CN2
SP
POWER TRANSFORMER
W4 OEXGSA07045B
W5 OEXGEL03120B
W6 OEXGZA08100E
AC IN
AC ADJ
PEDAL
ACP
CN1
CN2
CN3
BLK
BLK (WHITE LINE)
SP1 20cm, 6Ω
F
E
D
C
B
A
1
2
3
4
5

BLOCK Diagram


Tone Signal
Control Signal
CPSL
CN1
Switches & LED's
Q1~8
LED Driver
IC2
Buffer
LD1
Display
IC1
Micro Computer
CN2
MKBL
Key Switches & Diodes
CN1
CN2
MKBU
CN5
CN6
IC1
Gate Array
Key S
CN1
MAIN
CN5
CN4
IC2
Micro Computer
A0~A23
Address Bus
D0~D15
Data Bus
MIDI OUT
MIDI IN
IC10
D/A Converter
IC12
IC3
SD0
D0~D15
Tone Generator
AD0~AD20
DT0~DT15
IC1
D0~D7
Buffers
D0~D15
A0~A17
4Mbit Programed ROM
IC7
D0~D15
A0~A17
4Mbit Programed ROM
IC8
D0~D7
A0~A14
256Kbit Static RAM
IC4
D0~D7
A0~A14
256Kbit Static RAM
IC5
IC9
A0~A14
256Kbit Static RAM
D0~D7
IC11
A0~A19
8Mbit Wave ROM
D0~D15
6
7
8
9
10

BLOCK Diagram


Tone Signal
Control Signal
CPSL
CN1
Switches & LED's
Q1~8
LED Driver
IC2
Buffer
LD1
Display
IC1
Micro Computer
CN2
MKBL
Key Switches & Diodes
CN1
CN2
MKBU
CN5
CN6
IC1
Gate Array
Key Switches & Diodes
CN1
PKB
Switches
CN1
CN3
CN2
EXP
CN1
FOOT SW
CDS
ACP
CN3
JK2
Pedal In
CN1
CN2
S1
Power Switch
PC1
AC IN
T1
Power transformer
MAIN
CN5
CN4
IC2
Micro Computer
A0~A23
Address Bus
D0~D15
Data Bus
MIDI OUT
MIDI IN
IC10
D/A Converter
IC12
IC3
SD0
D0~D15
Tone Generator
AD0~AD20
DT0~DT15
IC1
D0~D7
Buffers
D0~D15
A0~A17
4Mbit Programed ROM
IC7
D0~D15
A0~A17
4Mbit Programed ROM
IC8
D0~D7
A0~A14
256Kbit Static RAM
IC4
D0~D7
A0~A14
256Kbit Static RAM
IC5
IC9
A0~A14
256Kbit Static RAM
D0~D7
IC11
A0~A19
8Mbit Wave ROM
D0~D15
+VCC
CN6
CN7
CN2
AS
CN5
CN8
IC1,Q5
+15V
+15V Regulator
IC2,Q7
D3,5,8,10
−15V
−15V Regulator
IC7,8
Equalizing
CN1
IC9
Headphone Amplifier
Q1,2
CN4
IC10
Power Amplifier
Q14~17
CN10
SP1
20cm,6 Ω
SP2
6.5cm,8 Ω
HP
CN1
JK1
HEAD PHONE
JACK
JK1
LINE OUT
IC1
Photo Coupler
MIDI IN
MIDI OUT
Q1
JK2
IN
JK3
OUT
MIDI
CN1

MAIN P.C. Board

F

E

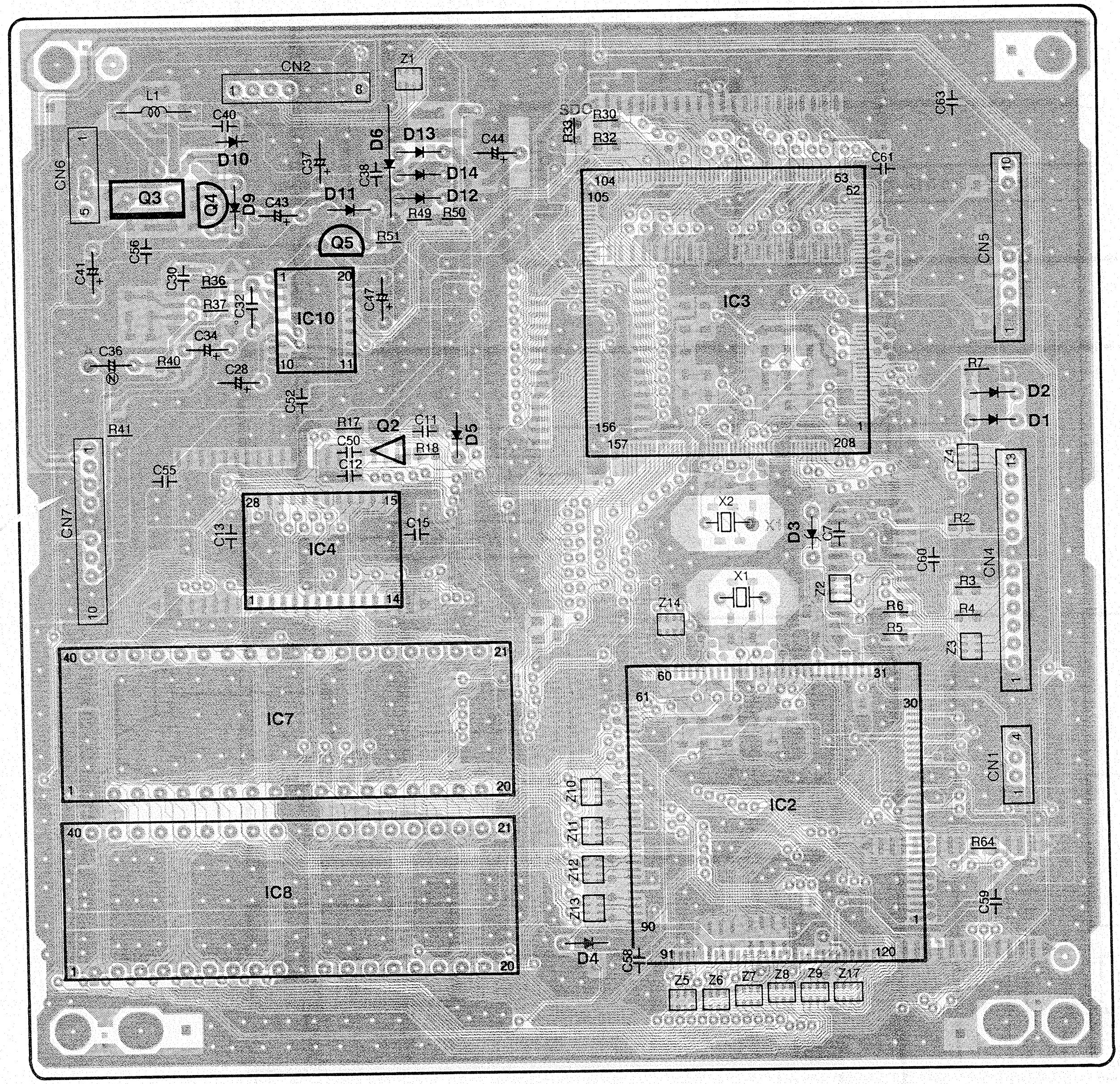
D

C

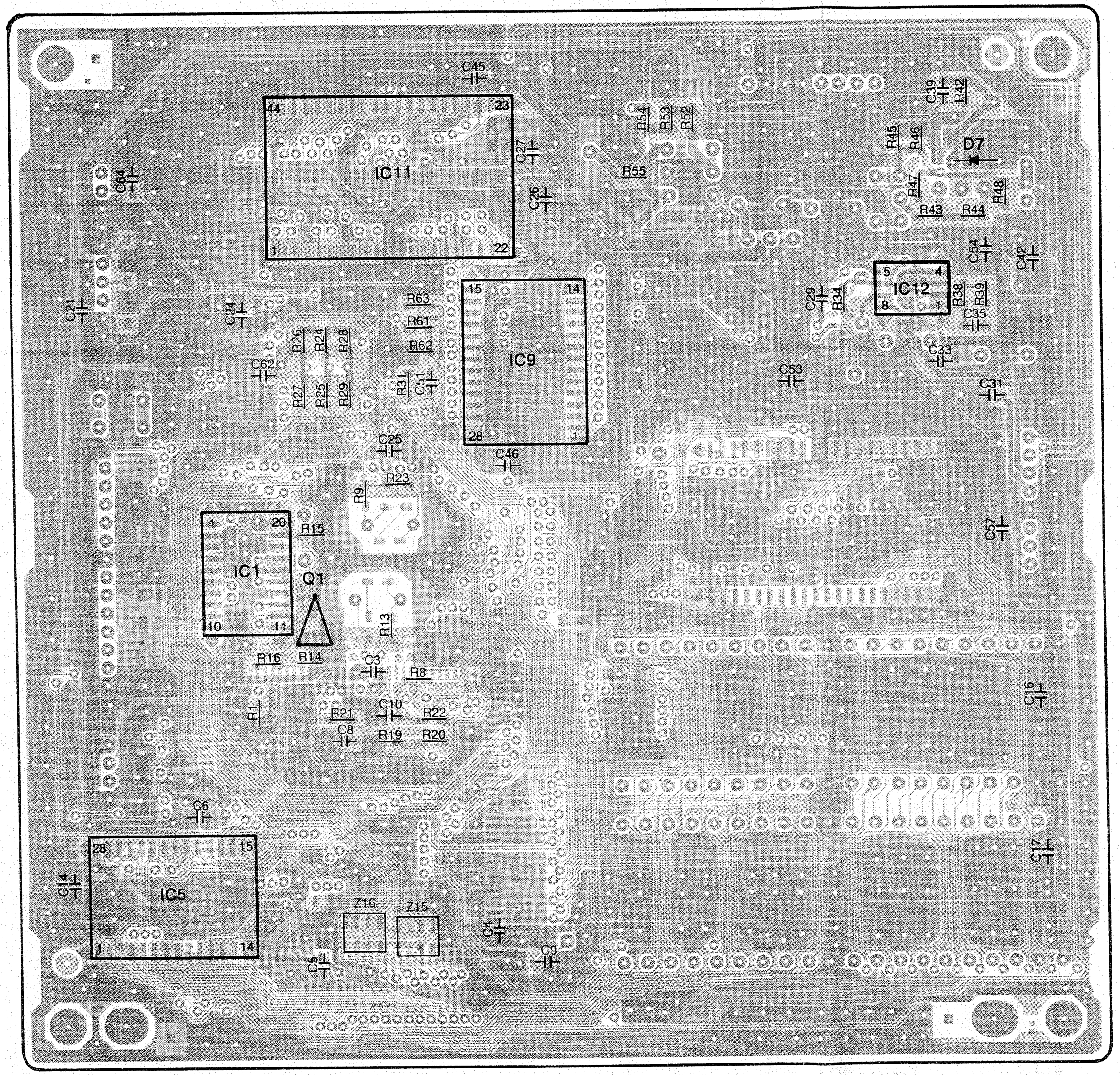
B

A

MAIN (SXPG222611) (COMPONENT SIDE)


CN2
Z1
L1
C40
D10
CN6
Q3
Q4
D9
C43
C37
C38
D6
D13
D14
D12
D11
R49
R50
C44
SDC
R33
R30
R32
Q5
R51
C41
C56
C30
R36
R37
C32
IC10
C47
C34
C36
R40
C28
C52
IC3
104
105
53
52
156
157
208
C61
C63
CN5
R7
D2
D1
R41
C55
R17
C50
C12
Q2
C11
R18
D5
CN7
IC4
28
15
14
C13
C15
X2
X1
D3
C7
Z4
R2
C60
R3
R4
CN4
Z14
Z2
R6
R5
Z3
IC7
40
21
1
20
IC8
60
31
61
30
IC2
Z10
Z11
Z12
Z13
90
91
120
D4
C58
Z5
Z6
Z7
Z8
Z9
Z17
R64
C59
CN1

MAIN (FOIL SIDE)


C45
44
23
IC11
22
C27
C26
C64
R54
R53
R52
R55
C39
R42
R45
R46
D7
R47
R43
R44
R48
C21
C74
R63
R61
R62
R26
R24
R28
C62
R27
R25
R29
R31
C51
IC9
15
14
28
C25
C46
R23
C29
R34
IC12
R38
C35
R39
C54
C42
C53
C33
C31
IC1
R15
R9
Q1
R13
R16
R14
C3
R8
R1
R21
C10
R22
C8
R19
R20
C57
C16
C6
IC5
C14
Z16
Z15
C4
C5
C9
C17

MAIN

NOTES:

- IC'S

IC1:	D74HC
IC2:	D70236
IC3:	D94137
IC4:	M5256
IC5:	LH52B
IC7:	QSIGC
IC7-1:	〔HN27
IC8:	QSIGC
IC8-1:	〔HN27
IC9:	TC5183
IC10:	PCM69
IC11:	QSIGU
IC12:	M5218

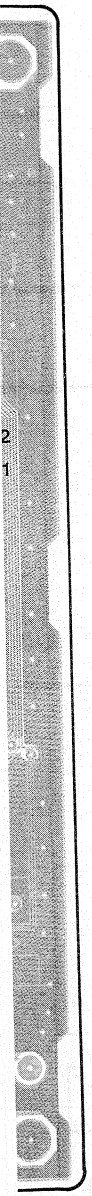
- TRANSISTORS

Q1:	2SB70
Q2:	2SD601
Q3:	2SA164
Q4, 5:	2SC181

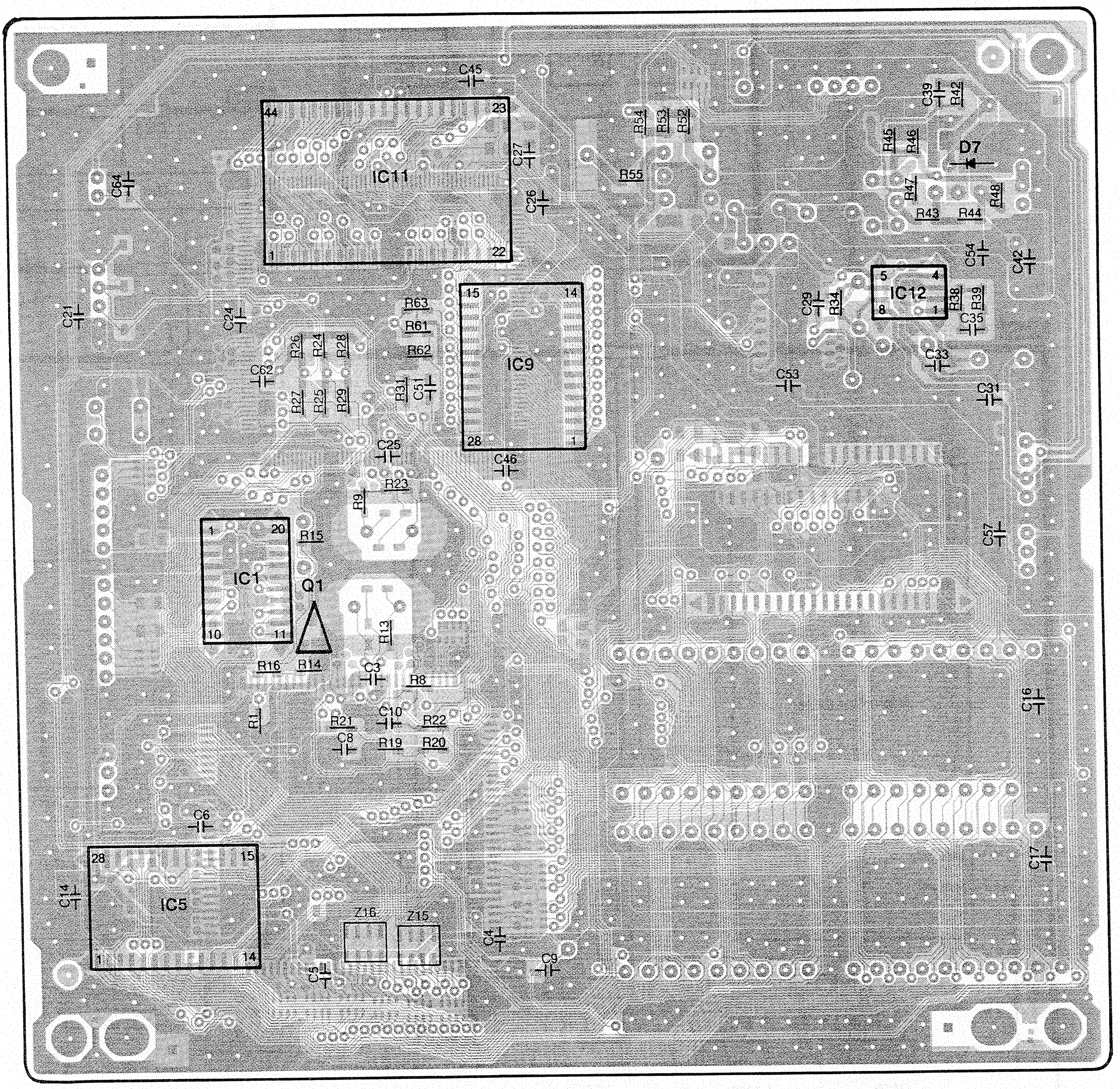
- DIODES

D1, 2:	MA165
D3:	MA103
D4, 5:	MA165
D6:	MA206
D7:	MA701
D8:	MA110
D9:	MA165
D10:	MA804
D11:	MA405
D12～14:	MA165

1 2 3 4 5 6 7 8 9 10



MAIN (FOIL SIDE)


C45
44
23
IC11
1
22
C27
C26
C64
R55
R54
R53
R52
C39
R42
R45
R46
D7
R47
R48
R43
R44
C54
C42
C21
C24
R63
R61
R62
15
14
IC9
28
1
IC12
5
4
8
1
C29
R34
R38
R39
C35
C33
C31
C62
R26
R24
R28
R27
R25
R29
R31
C51
C53
C25
C46
R9
R23
IC1
1
20
10
11
R15
Q1
R13
R16
R14
C3
R8
R1
R21
C10
R22
C8
R19
R20
C57
C16
C6
28
15
IC5
1
14
C14
Z16
Z15
C4
C9
C5
C17

MAIN

NOTES:

- IC'S

IC1:	D74HC244GS
IC2:	D70236AGD10
IC3:	D94137GD-201
IC4:	M5256BFP85LL
IC5:	LH52B256N7LL
IC7:	QSIGCEA1AX
IC7-1:	〔HN27C4096G10〕
IC8:	QSIGCEA1BX
IC8-1:	〔HN27C4096G10〕
IC9:	TC51832AFL70
IC10:	PCM69AU
IC11:	QSIGU3C08311
IC12:	M5218AFP

- TRANSISTORS

Q1:	2SB709AR
Q2:	2SD601AQ
Q3:	2SA1643
Q4, 5:	2SC1815GR

- DIODES

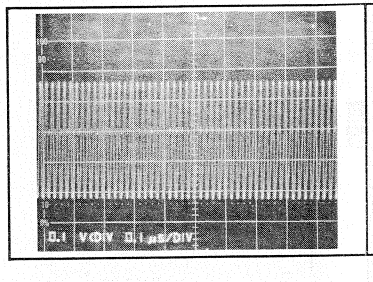
D1, 2:	MA165
D3:	MA1030
D4, 5:	MA165
D6:	MA2062LF
D7:	MA701A
D8:	MA110
D9:	MA165
D10:	MA8047
D11:	MA4056
D12～14:	MA165

■ Measuring Condition

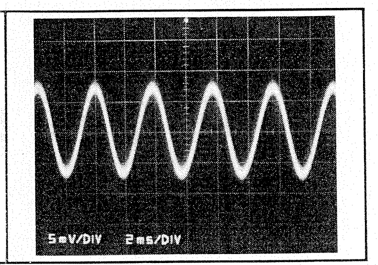
Set the initial setting mode (Refer to page I-7)

- SOUND .... LOWER TAB ORGAN 8′
- TREMOLO .... ON
- KEYBOARD C3
- RHYTHM.. Start
- TEMPO... ♩ =120

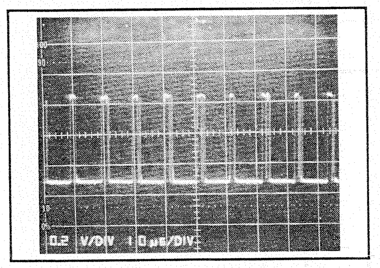
X1



A

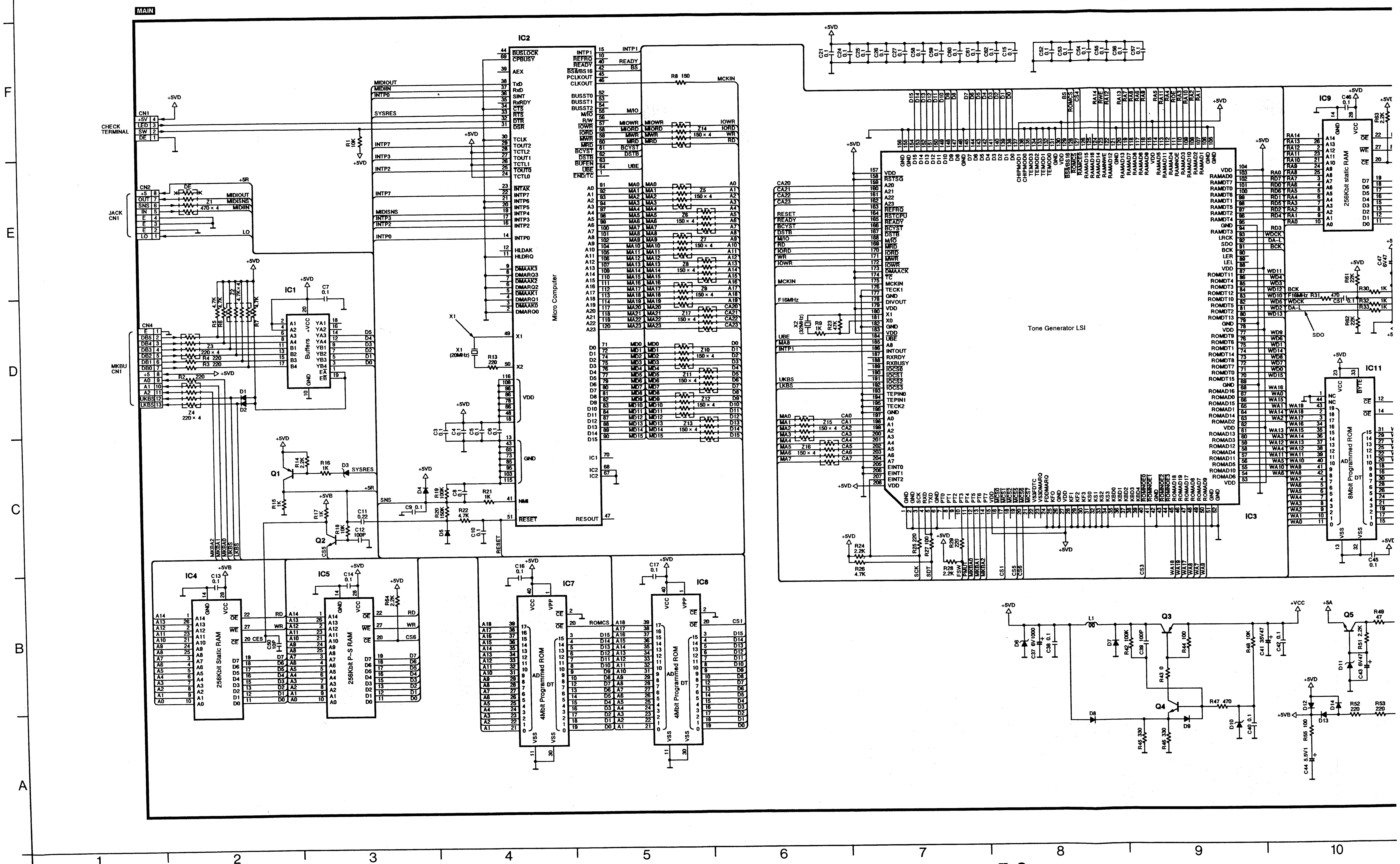


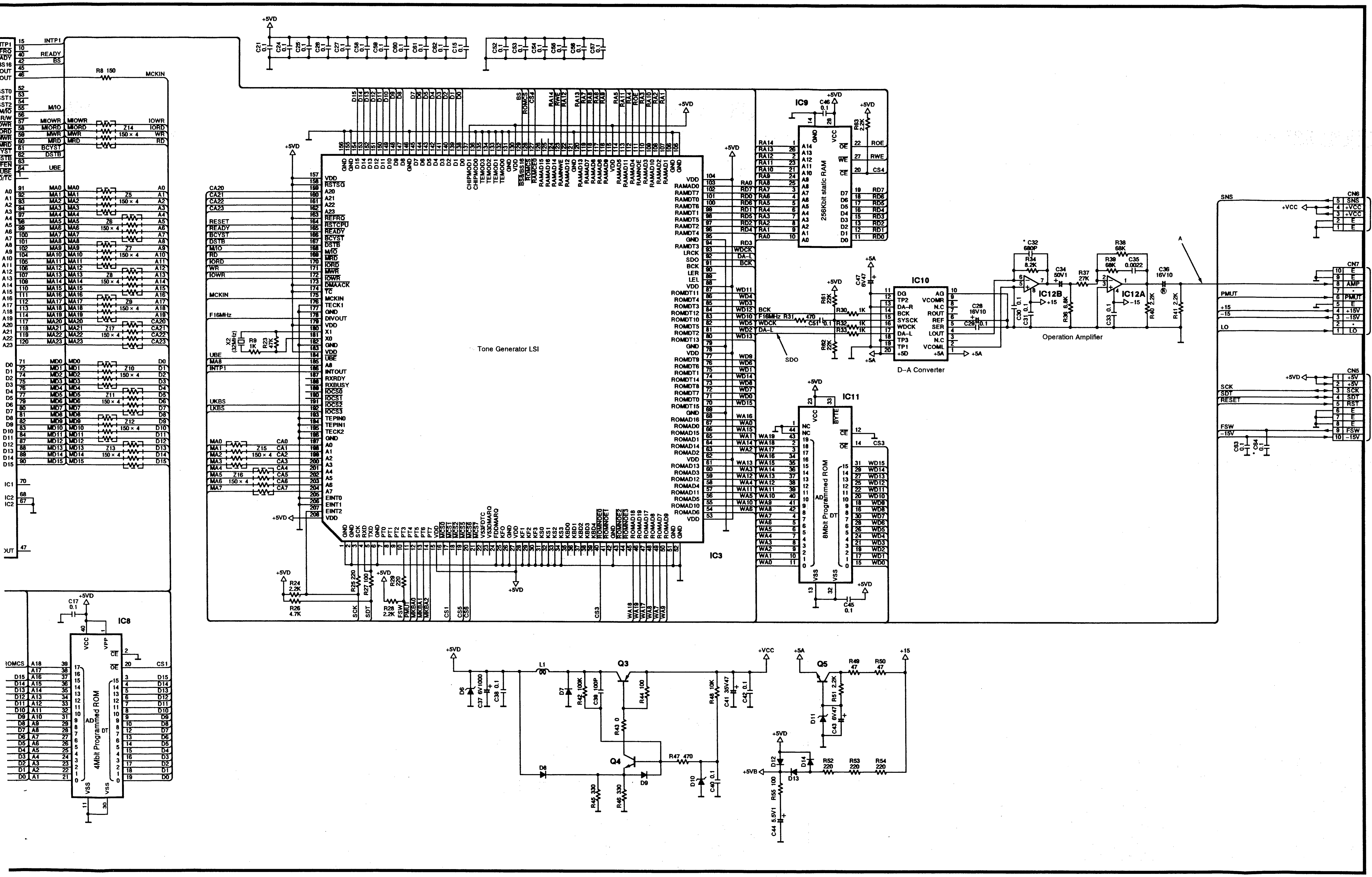
SD0



5 6 7 8 9 10 11 12 13 14

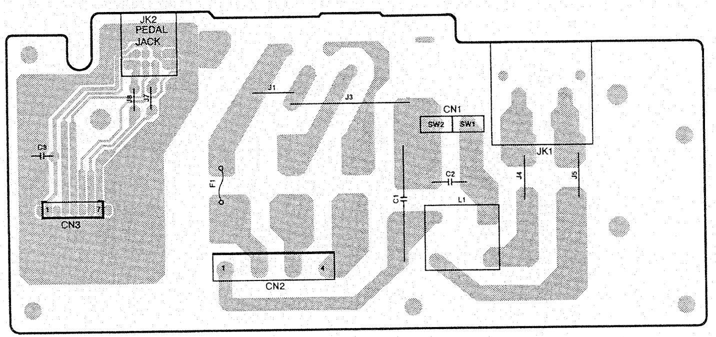
MAIN P.C. Diagram


MAIN
IC2
Micro Computer
IC1
Buffers
IC3
Tone Generator LSI
IC4
256Kbit Static RAM
IC5
256Kbit P-S RAM
IC7
4Mbit Programmed ROM
IC8
4Mbit Programmed ROM
IC9
256Kbit static RAM
IC11
8Mbit Programmed ROM
CHECK TERMINAL
CN1
JACK CN1
CN2
MKBU CN1
CN4
X1 (20MHz)
X2 (32MHz)
Q1
Q2
Q3
Q4
Q5
+5VD
+5VB
+5R
+VCC
+5A
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10


IC3
Tone Generator LSI
IC9
256Kbit static RAM
IC10
D-A Converter
IC11
8Mbit Programmed ROM
IC8
4Mbit Programmed ROM
IC12A
IC12B
Operation Amplifier
CN6
AS CN6
CN7
AS CN1
CN5
CPSL CN2
SNS
PMUT
+15
-15
LO
SCK
SDT
RESET
FSW
-15V
+VCC
+5VD
+5A
+5VB
SDO
A
Q3
Q4
Q5
L1
X2 (32MHz)
MCKIN
F16MHz
INTP1
Z5
Z6
Z7
Z8
Z9
Z10
Z11
Z12
Z13
Z14
Z15
Z16
Z17

AS/ACP/HP P.C. Board

ACP **M** **MC** **XM** (SXPG222721B)

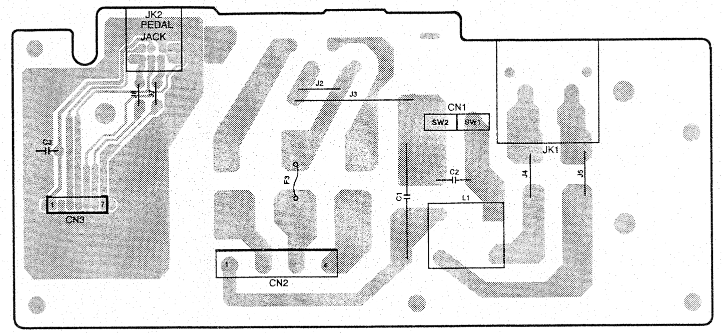

JK2
PEDAL
JACK
J1
J3
CN1
SW2
SW1
JK1
C3
F1
C1
C2
L1
J4
J5
CN3
CN2

ACP

NOTE:

- FUSE
  F1 : XBA1C40NU100

XL (SXPG222741B)
ACP Others (SXPG222711B)

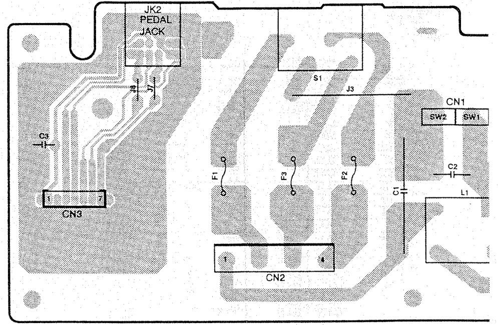

JK2
PEDAL
JACK
J2
J3
CN1
SW2
SW1
JK1
C3
F3
C1
C2
L1
J4
J5
CN3
CN2

ACP

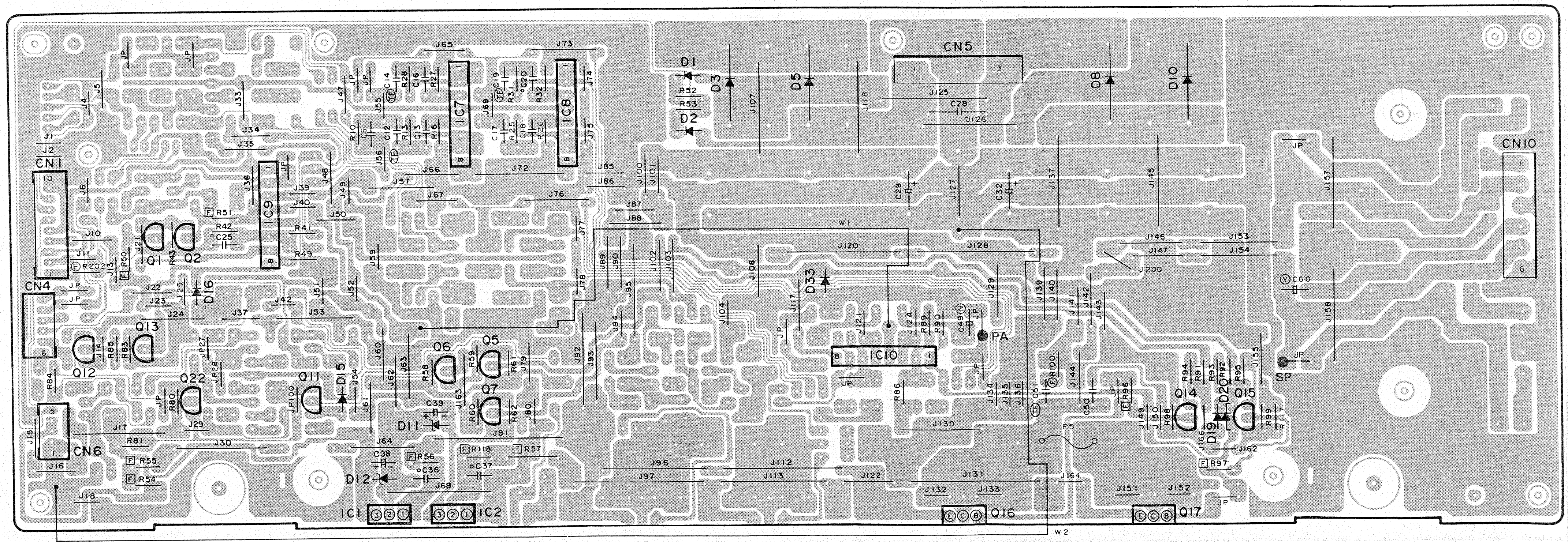
NOTE:

- FUSE
  F3: XBA2C10TB0

XR (SXPG22275
ACP **X** **XS** **XD** **XT** (SXPG22273


JK2
PEDAL
JACK
J3
CN1
SW2
SW1
C3
F1
F2
C1
C2
L1
CN3
CN2

Others (SXPG2170151)
AS **M** **MC** **XM** (SXPG2170161)


CN1
CN4
CN5
CN6
CN10
IC1
IC2
IC7
IC8
IC9
IC10
Q1
Q2
Q5
Q6
Q7
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q22
D1
D2
D3
D5
D8
D10
D11
D12
D15
D16
D19
D20
D33
PA
SP
W1
W2
F5

AS

NOTES:

- IC'S

IC1:	M5F78M15L
IC2:	M5F79M15L
IC7～10:	M5218AL

- TRANSISTORS

Q1:	2SC3940ARS
Q2:	2SA1534AR
Q5, 6:	2SA1015-GR
Q7, 11, 12:	2SC1815GR
Q13:	2SA1015-GR
Q14:	2SC1815GR
Q15:	2SA1015-GR
Q16:	2SB946P
Q17:	2SD1271P
Q22:	2SA1015-GR

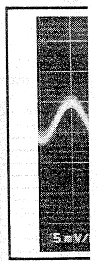
- DIODES

D1, 2:	SVDGERA1502
D3, 5, 8, 10:	SVDS3V20
D11, 12:	MA4180
D15:	MA165
D16, 33:	EK04
D19, 20:	MA29WA

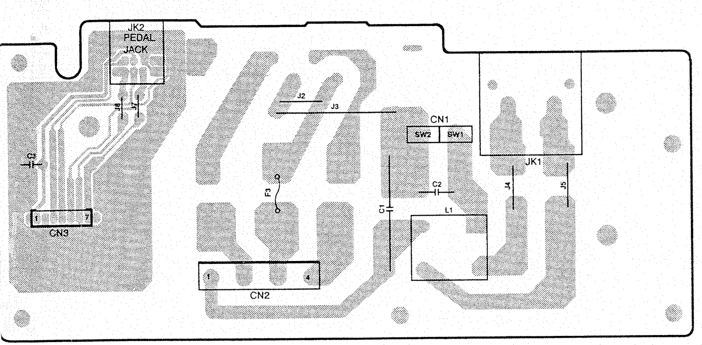
■ Wav

1. Activ
2. Set t
   - LO
   - LO
   - TR
   - DI
3. Key..

PA

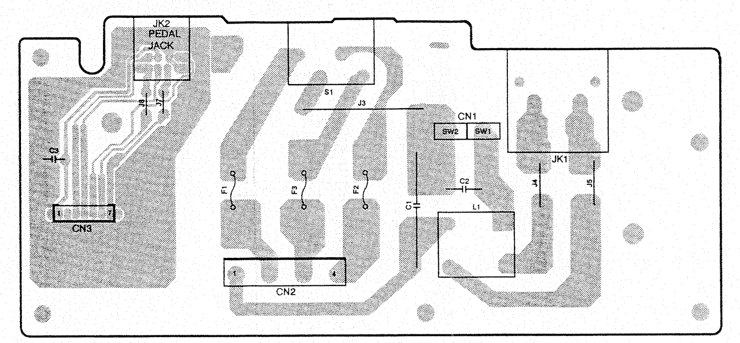


XL (SXPG222741B)
ACP Others (SXPG222711B)


JK2 PEDAL JACK
J2
J3
CN1
SW2
SW1
JK1
C3
F3
C1
C2
L1
J4
J5
CN3
CN2

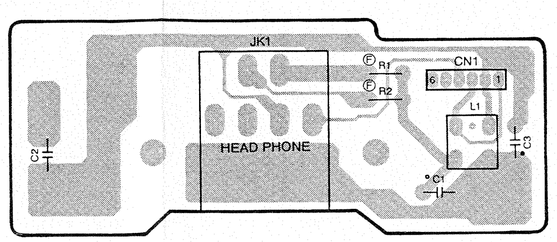
ACP
NOTE:
- FUSE
  F3: XBA2C10TB0

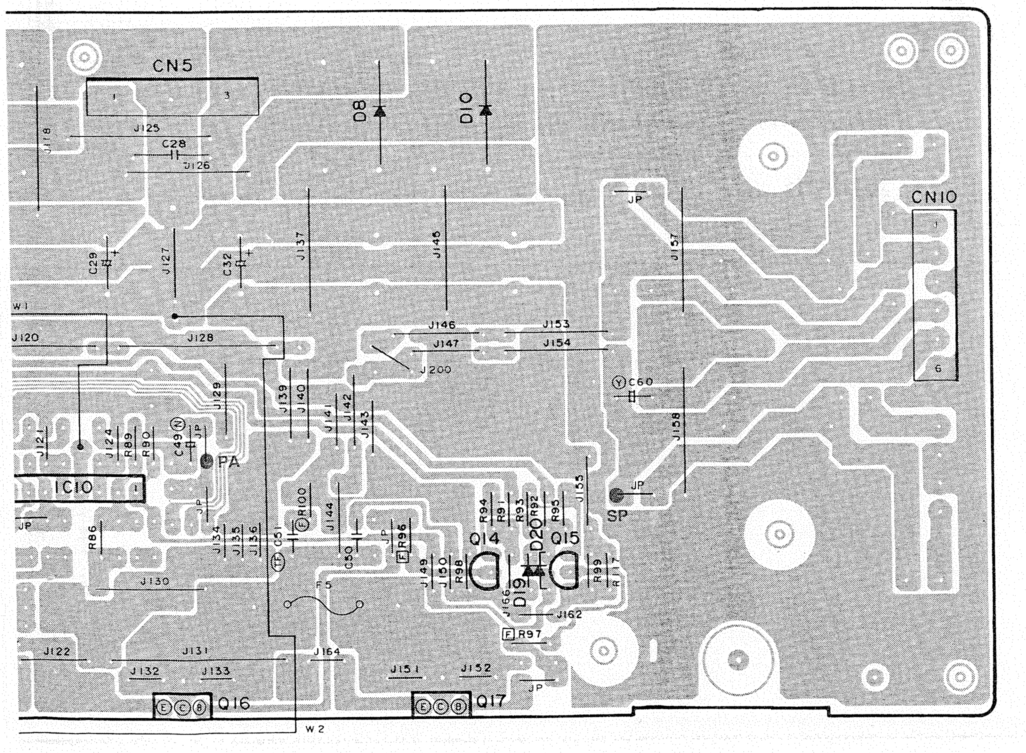
XR (SXPG222751B)
ACP **X** **XS** **XD** **XT** (SXPG222731B)


JK2 PEDAL JACK
S1
J3
CN1
SW2
SW1
JK1
C3
F1
F2
F3
C1
C2
L1
J4
J5
CN3
CN2

ACP
NOTE:
- FUSES
  F1: XBA2C16TB0
  F2, 3: XBA2C10TB0

HP (SXPG221211C)


JK1
R1
R2
CN1
L1
C3
C2
C1
HEAD PHONE

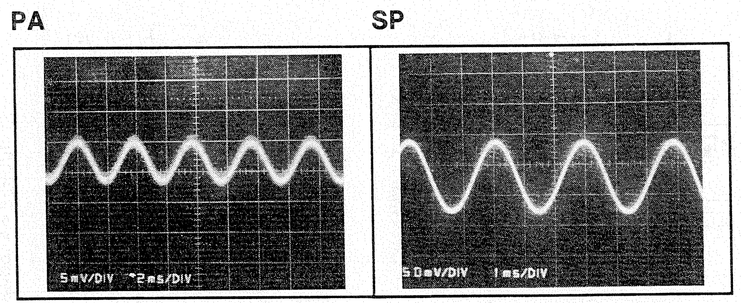

CN5
J118
J125
C28
J126
D8
D10
CN10
JP
J127
C29
C32
J137
J145
J157
J120
J128
J146
J147
J153
J154
J200
C60
J129
J139
J140
J141
J142
J143
J158
J121
J124
R89
R90
C49
PA
IC10
R86
J134
J135
J136
C51
R100
J144
C50
R96
J149
J150
R98
R94
R93
R91
R92
D20
R95
J155
SP
Q14
Q15
D19
J130
F5
J122
J131
J164
J162
R97
R99
J132
J133
J151
J152
Q16
Q17
W2

AS
NOTES:

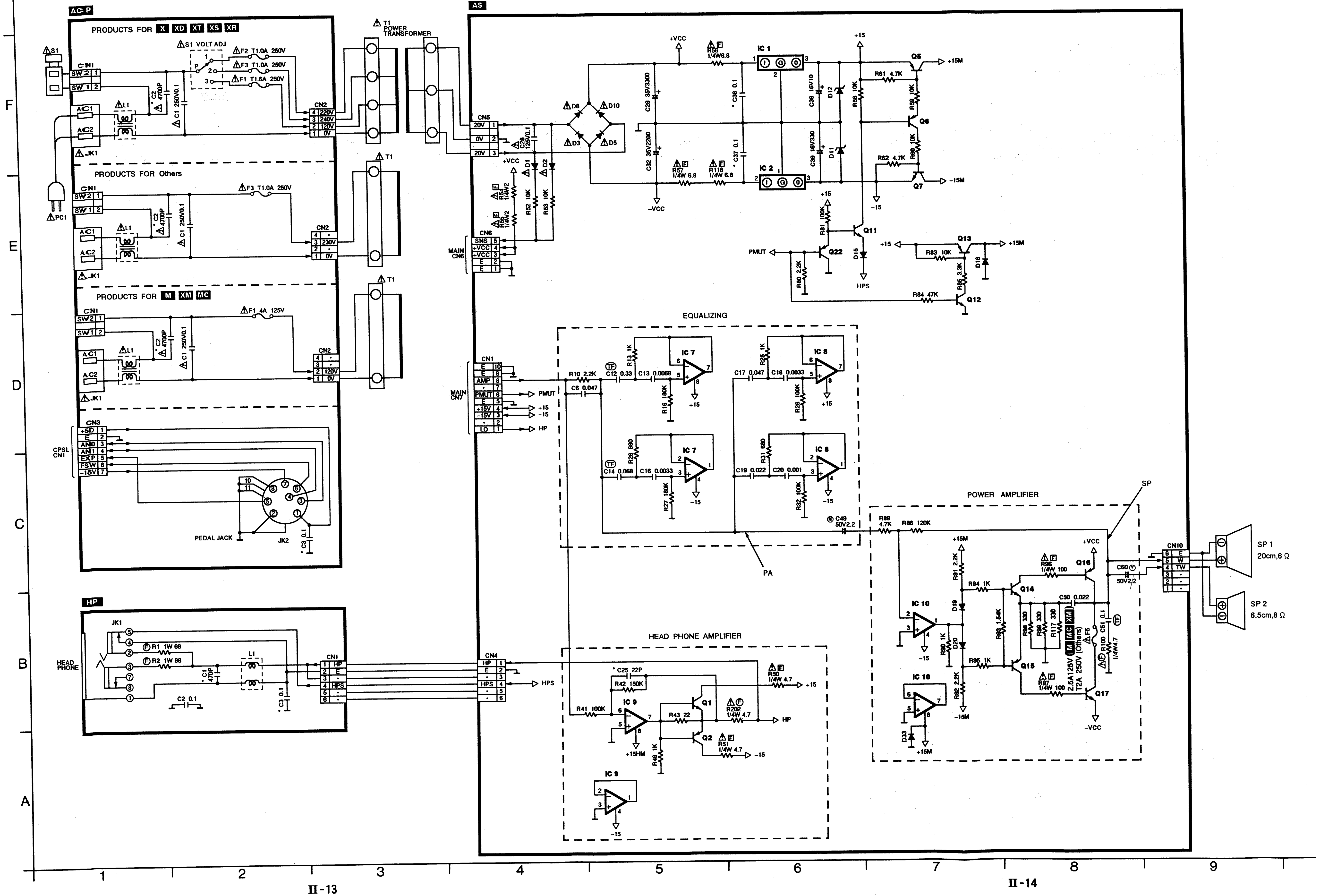
• IC'S	
IC1:	M5F78M15L
IC2:	M5F79M15L
IC7～10:	M5218AL
• TRANSISTORS	
Q1:	2SC3940ARS
Q2:	2SA1534AR
Q5, 6:	2SA1015-GR
Q7, 11, 12:	2SC1815GR
Q13:	2SA1015-GR
Q14:	2SC1815GR
Q15:	2SA1015-GR
Q16:	2SB946P
Q17:	2SD1271P
Q22:	2SA1015-GR
• DIODES	
D1, 2:	SVDGERA1502
D3, 5, 8, 10:	SVDS3V20
D11, 12:	MA4180
D15:	MA165
D16, 33:	EK04
D19, 20:	MA29WA

■ Waveform measurement

1. Activate the initial setting method. (Refer to page I-7)
2. Set the E. organ to reference required mode as followings.
   - LOWER ORCHESTRAL CONDUCTOR..... TAB & ORGAN
   - LOWER TAB & ORGAN .... FLUTE 8′ : ON
   - TREMOLO... OFF
   - DIGITAL REVERB....................................... ALL OFF
3. Key... C3



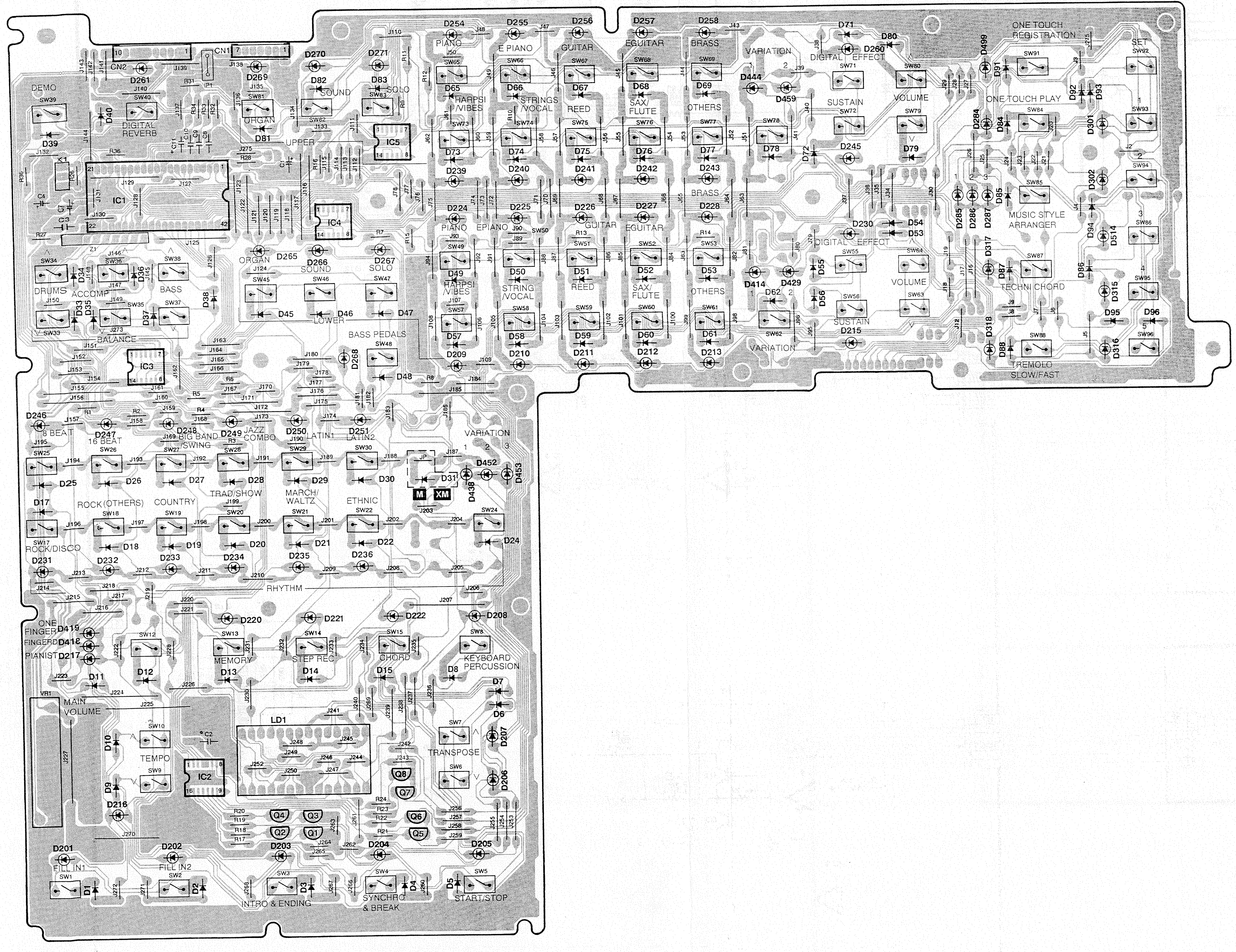
AS/ACP/HP P.C. Diagram


ACP
PRODUCTS FOR X XD XT XS XR
S1
S1 VOLT ADJ
F2 T1.0A 250V
F3 T1.0A 250V
F1 T1.6A 250V
CN1
SW2
SW1
AC1
AC2
L1
C2 4700P
C1 250V0.1
JK1
PC1
CN2
220V
240V
120V
0V
T1 POWER TRANSFORMER
PRODUCTS FOR Others
F3 T1.0A 250V
230V
PRODUCTS FOR M XM MC
F1 4A 125V
CN3
CPSL CN1
+5D
E
AN0
AN1
EXP
FSW
-15V
PEDAL JACK
JK2
C3 0.1
HP
HEAD PHONE
R1 1W 68
R2 1W 68
C1 470P
C2 0.1
C3 0.1
HPS
AS
CN5
20V
0V
C28 125V0.1
D8
D10
D3
D5
+VCC
D1
D2
R54 1/4W2
R55 1/4W2
R52 10K
R53 10K
CN6
MAIN CN6
SNS
+VCC
C29 35V3300
C32 35V2200
-VCC
R56 1/4W6.8
R57 1/4W 6.8
R118 1/4W 6.8
C36 0.1
C37 0.1
IC 1
IC 2
C38 16V10
C39 16V330
D12
D11
+15
R58 10K
R61 4.7K
Q5
+15M
R59 10K
Q6
R60 10K
R62 4.7K
Q7
-15M
-15
R81 100K
Q11
PMUT
Q22
R80 2.2K
D15
HPS
Q13
R83 10K
R85 3.3K
D16
R84 47K
Q12
EQUALIZING
CN1
MAIN CN7
AMP
PMUT
+15V
-15V
LO
R10 2.2K
C6 0.047
C12 0.33
R13 1K
C13 0.0068
IC 7
R16 180K
R28 680
C14 0.068
C16 0.0033
R27 180K
C17 0.047
C18 0.0033
R25 1K
IC 8
R26 100K
C19 0.022
R31 680
C20 0.001
R32 100K
C49 50V2.2
PA
POWER AMPLIFIER
SP
R89 4.7K
R86 120K
+15M
+VCC
R91 2.2K
R94 1K
Q14
R96 1/4W 100
Q16
C50 0.022
IC 10
D19
D20
R90 1K
R93 1.54K
R98 330
R99 330
R117 330
R95 1K
Q15
R92 2.2K
R97 1/4W 100
Q17
2.5A125V T2A 250V (Others)
F5
R100 1/4W4.7
C51 0.1
C60 50V2.2
CN10
SP 1 20cm,6 Ω
SP 2 6.5cm,8 Ω
D33
HEAD PHONE AMPLIFIER
CN4
C25 22P
R42 150K
R41 100K
IC 9
Q1
Q2
R43 22
R50 1/4W 4.7
R202 1/4W 4.7
R51 1/4W 4.7
R49 1K
+15HM
A
B
C
D
E
F
1
2
3
4
5
6
7
8
9

CPSL P.C. Board

Others (SXPG221231A)

CPSL M XM (SXPG221241A)

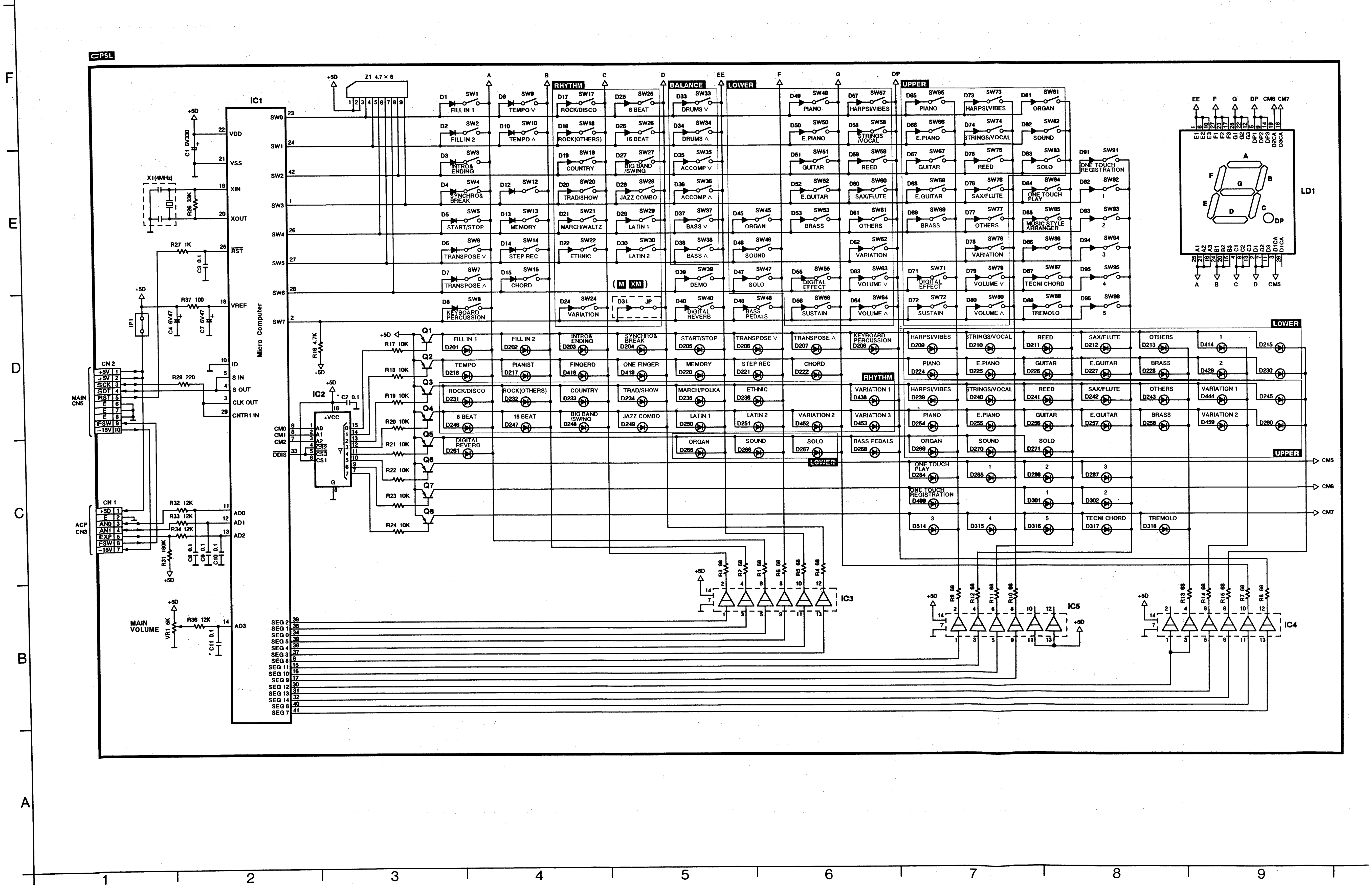

F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
DEMO
DIGITAL REVERB
CN1
CN2
ORGAN
UPPER
SOUND
SOLO
IC1
IC2
IC3
IC4
IC5
K1
PIANO
E PIANO
GUITAR
EGUITAR
BRASS
HARPSI /VIBES
STRINGS /VOCAL
REED
SAX/ FLUTE
OTHERS
VARIATION
DIGITAL EFFECT
SUSTAIN
VOLUME
ONE TOUCH REGISTRATION
SET
ONE TOUCH PLAY
MUSIC STYLE ARRANGER
TECHNI CHORD
TREMOLO SLOW/FAST
DRUMS
ACCOMP
BASS
BALANCE
LOWER
BASS PEDALS
8 BEAT
16 BEAT
BIG BAND /SWING
JAZZ COMBO
LATIN1
LATIN2
ROCK (OTHERS)
COUNTRY
TRAD/SHOW
MARCH/ WALTZ
ETHNIC
ROCK/DISCO
RHYTHM
M
XM
ONE FINGER
FINGERD
PIANIST
MEMORY
STEP REC
CHORD
KEYBOARD PERCUSSION
MAIN VOLUME
VR1
TEMPO
LD1
TRANSPOSE
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
FILL IN1
FILL IN2
INTRO & ENDING
SYNCHRO & BREAK
START/STOP

CPSL

NOTES:

• IC'S	
IC1:	M37471M2196S
IC2:	H74LS138FPTR
IC3~5:	M74LS07FP
• TRANSISTORS	
Q1~8:	2SA830SB
• DIODES	
D1~15, 17~22, 24~31, 33~40, 45~53, 55~69, 71~88, 91~96:	MA165
D201~213, 215, 217, 220, 224~228, 230~236, 239~243, 245~251, 254~258, 260, 261, 265~271, 285~287, 317, 318, 414, 418, 419, 429, 438, 444, 452, 453, 459:	LN282R
D216, 221, 222, 284, 301, 302, 315, 316, 499, 514:	LN382G

CPSL P.C. Diagram

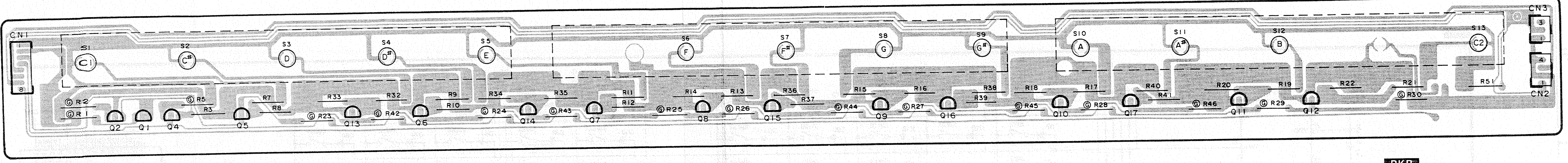


CPSL
IC1
Micro Computer
VDD
VSS
XIN
XOUT
RST
VREF
ID
S IN
S OUT
CLK OUT
CNTR1 IN
SW0
SW1
SW2
SW3
SW4
SW5
SW6
SW7
CM0
CM1
CM2
DDIS
AD0
AD1
AD2
AD3
SEG 2
SEG 1
SEG 0
SEG 5
SEG 4
SEG 3
SEG 8
SEG 10
SEG 9
SEG 11
SEG 12
SEG 13
SEG 14
SEG 6
SEG 7
IC2
+VCC
A0
A1
A2
CS2
CS3
CS1
IC3
IC4
IC5
LD1
Z1 4.7 × 8
X1(4MHz)
R26 33K
C1 6V330
R27 1K
C3 0.1
R37 100
C4 6V47
C7 6V47
IP1
R28 220
R16 4.7K
C2 0.1
R17 10K
R18 10K
R19 10K
R20 10K
R21 10K
R22 10K
R23 10K
R24 10K
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
R32 12K
R33 12K
R34 12K
R31 180K
C8 0.1
C9 0.1
C10 0.1
MAIN VOLUME
VR1 5K
R36 12K
C11 0.1
+5D
MAIN CN5
CN 2
+5V
+5V
SCK
SDT
RST
E
E
E
FSW
-15V
ACP CN3
CN 1
+5D
E
AN0
AN1
EXP
FSW
-15V
RHYTHM
BALANCE
LOWER
UPPER
(M XM)
A
B
C
D
EE
F
G
DP
SW1 FILL IN 1
SW2 FILL IN 2
SW3 INTRO& ENDING
SW4 SYNCHRO& BREAK
SW5 START/STOP
SW6 TRANSPOSE ∨
SW7 TRANSPOSE ∧
SW8 KEYBOARD PERCUSSION
SW9 TEMPO ∨
SW10 TEMPO ∧
SW12
SW13 MEMORY
SW14 STEP REC
SW15 CHORD
SW17 ROCK/DISCO
SW18 ROCK(OTHERS)
SW19 COUNTRY
SW20 TRAD/SHOW
SW21 MARCH/WALTZ
SW22 ETHNIC
SW24 VARIATION
SW25 8 BEAT
SW26 16 BEAT
SW27 BIG BAND /SWING
SW28 JAZZ COMBO
SW29 LATIN 1
SW30 LATIN 2
JP
SW33 DRUMS ∨
SW34 DRUMS ∧
SW35 ACCOMP ∨
SW36 ACCOMP ∧
SW37 BASS ∨
SW38 BASS ∧
SW39 DEMO
SW40 DIGITAL REVERB
SW45 ORGAN
SW46 SOUND
SW47 SOLO
SW48 BASS PEDALS
SW49 PIANO
SW50 E.PIANO
SW51 GUITAR
SW52 E.GUITAR
SW53 BRASS
SW55 DIGITAL EFFECT
SW56 SUSTAIN
SW57 HARPSI/VIBES
SW58 STRINGS /VOCAL
SW59 REED
SW60 SAX/FLUTE
SW61 OTHERS
SW62 VARIATION
SW63 VOLUME ∨
SW64 VOLUME ∧
SW65 PIANO
SW66 E.PIANO
SW67 GUITAR
SW68 E.GUITAR
SW69 BRASS
SW71 DIGITAL EFFECT
SW72 SUSTAIN
SW73 HARPSI/VIBES
SW74 STRINGS/VOCAL
SW75 REED
SW76 SAX/FLUTE
SW77 OTHERS
SW78 VARIATION
SW79 VOLUME ∨
SW80 VOLUME ∧
SW81 ORGAN
SW82 SOUND
SW83 SOLO
SW84 ONE TOUCH PLAY
SW85 MUSIC STYLE ARRANGER
SW86
SW87 TECNI CHORD
SW88 TREMOLO
SW91 ONE TOUCH REGISTRATION
SW92 1
SW93 2
SW94 3
SW95 4
SW96 5
D201 FILL IN 1
D202 FILL IN 2
D203 INTRO& ENDING
D204 SYNCHRO& BREAK
D205 START/STOP
D206 TRANSPOSE ∨
D207 TRANSPOSE ∧
D208 KEYBOARD PERCUSSION
D209 HARPSI/VIBES
D210 STRINGS/VOCAL
D211 REED
D212 SAX/FLUTE
D213 OTHERS
D414 1
D215
D216 TEMPO
D217 PIANIST
D418 FINGERD
D419 ONE FINGER
D220 MEMORY
D221 STEP REC
D222 CHORD
D224 PIANO
D225 E.PIANO
D226 GUITAR
D227 E.GUITAR
D228 BRASS
D429 2
D230
D231 ROCK/DISCO
D232 ROCK(OTHERS)
D233 COUNTRY
D234 TRAD/SHOW
D235 MARCH/POLKA
D236 ETHNIC
D438 VARIATION 1
D239 HARPSI/VIBES
D240 STRINGS/VOCAL
D241 REED
D242 SAX/FLUTE
D243 OTHERS
D444 VARIATION 1
D245
D246 8 BEAT
D247 16 BEAT
D248 BIG BAND /SWING
D249 JAZZ COMBO
D250 LATIN 1
D251 LATIN 2
D452 VARIATION 2
D453 VARIATION 3
D254 PIANO
D255 E.PIANO
D256 GUITAR
D257 E.GUITAR
D258 BRASS
D459 VARIATION 2
D260
D261 DIGITAL REVERB
D265 ORGAN
D266 SOUND
D267 SOLO
D268 BASS PEDALS
D269 ORGAN
D270 SOUND
D271 SOLO
D284 ONE TOUCH PLAY
D285 1
D286 2
D287 3
D499 ONE TOUCH REGISTRATION
D301 1
D302 2
D514 3
D315 4
D316 5
D317 TECNI CHORD
D318 TREMOLO
CM5
CM6
CM7
EE F G DP CM6 CM7
A B C D CM5
DP

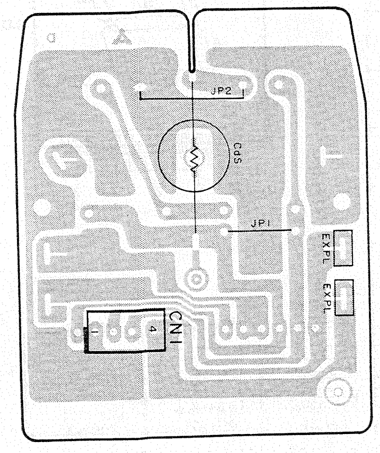
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9

PKB/EXP

PKB (SXPG145111)


CN1
S1 C1
S2 C#
S3 D
S4 D#
S5 E
S6 F
S7 F#
S8 G
S9 G#
S10 A
S11 A#
S12 B
S13 C2
CN3
CN2
R1 R2 R3 R5 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R17 R18 R19 R20 R21 R22 R23 R24 R25 R26 R27 R28 R29 R30 R32 R33 R34 R35 R36 R37 R38 R39 R40 R41 R42 R43 R44 R45 R46 R51
Q1 Q2 Q4 Q5 Q6 Q7 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q15 Q16 Q17

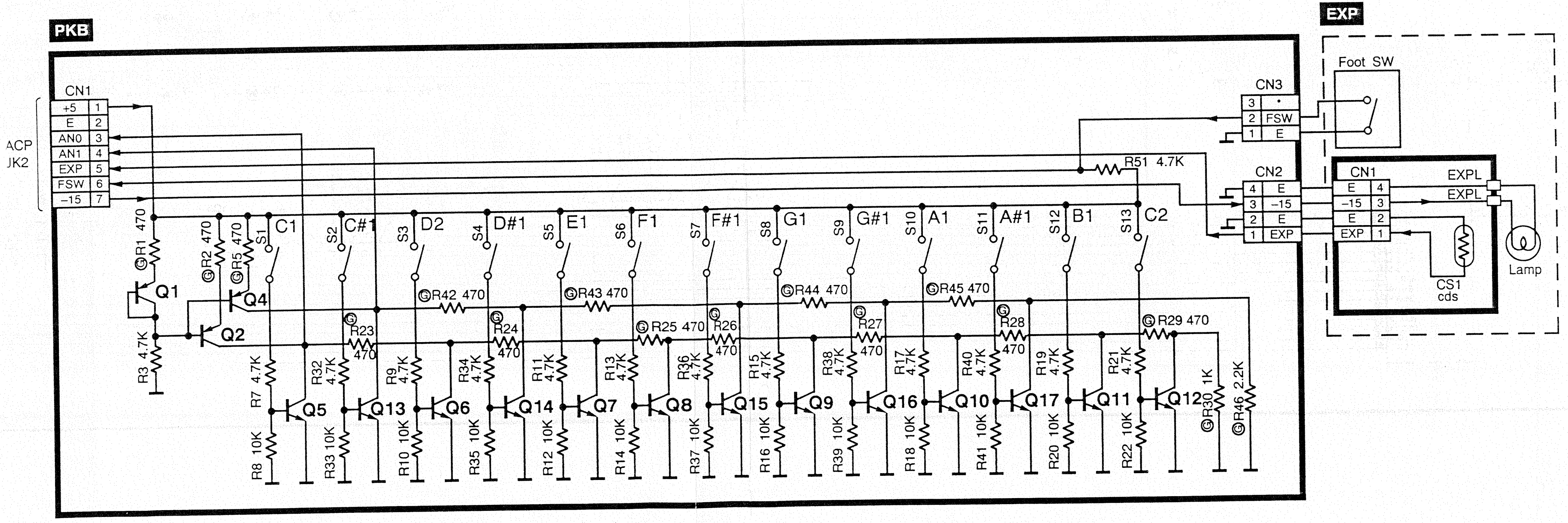
EXP (SXPG103211D)


JP2
cds
JP1
EXPU
EXPL
CN1

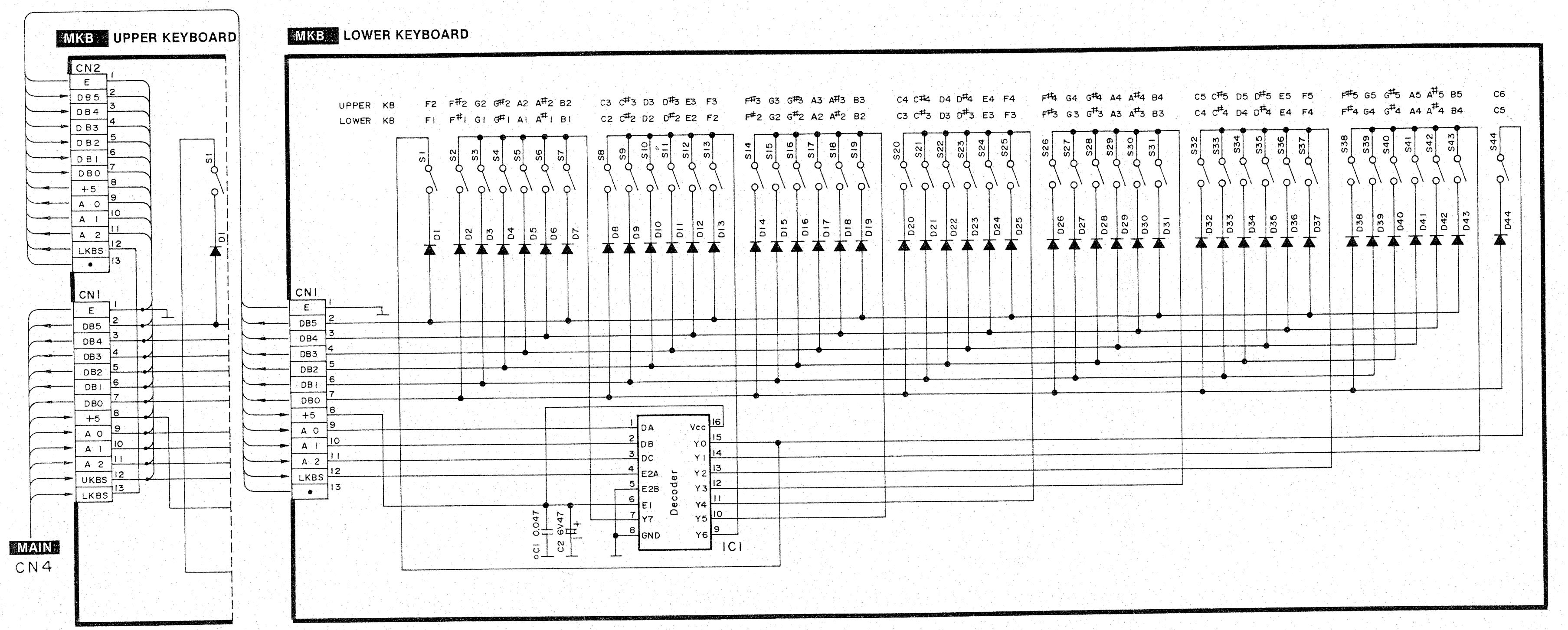
PKB

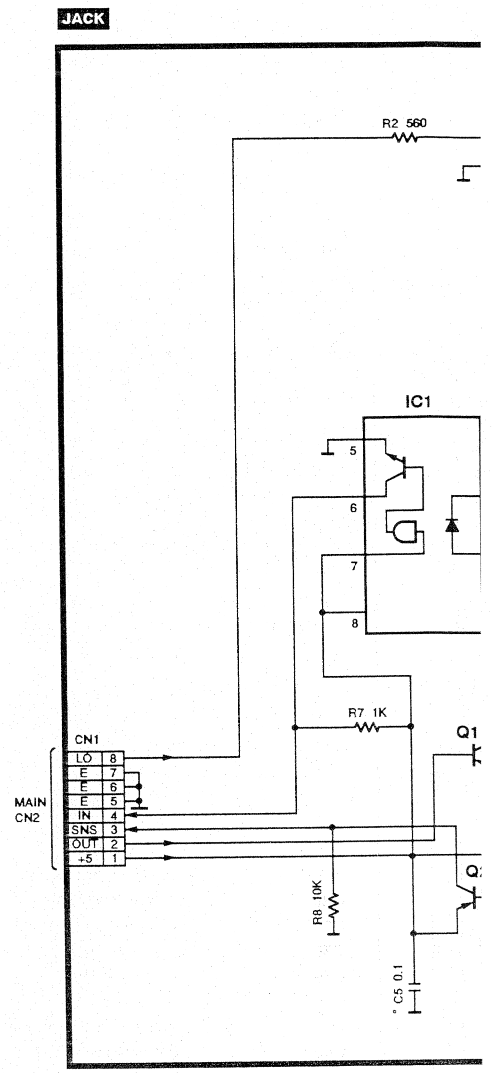
NOTE:

- TRANSISTORS
  Q1, 2, 4: 2SA1015-GR
  Q5~17: 2SC2320LFG

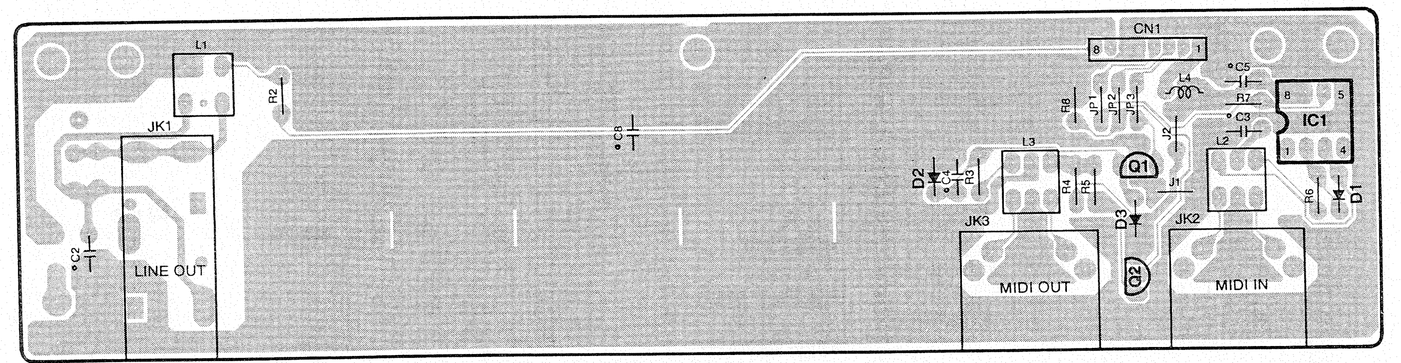

PKB
EXP
CN1
ACP JK2
+5 1
E 2
AN0 3
AN1 4
EXP 5
FSW 6
−15 7
R1 470
R2 470
R5 470
R3 4.7K
Q1
Q2
Q4
S1 C1
S2 C#1
S3 D2
S4 D#1
S5 E1
S6 F1
S7 F#1
S8 G1
S9 G#1
S10 A1
S11 A#1
S12 B1
S13 C2
R42 470
R43 470
R44 470
R45 470
R29 470
R23 470
R24 470
R25 470
R26 470
R27 470
R28 470
R7 4.7K
R32 4.7K
R9 4.7K
R34 4.7K
R11 4.7K
R13 4.7K
R36 4.7K
R15 4.7K
R38 4.7K
R17 4.7K
R40 4.7K
R19 4.7K
R21 4.7K
R8 10K
R33 10K
R10 10K
R35 10K
R12 10K
R14 10K
R37 10K
R16 10K
R39 10K
R18 10K
R41 10K
R20 10K
R22 10K
R30 1K
R46 2.2K
Q5 Q13 Q6 Q14 Q7 Q8 Q15 Q9 Q16 Q10 Q17 Q11 Q12
R51 4.7K
CN3
3 •
2 FSW
1 E
CN2
4 E
3 −15
2 E
1 EXP
Foot SW
CN1
E 4
−15 3
E 2
EXP 1
EXPL
EXPL
CS1 cds
Lamp

MKB/JACK


MKB UPPER KEYBOARD
MKB LOWER KEYBOARD
CN2
CN1
E
DB5
DB4
DB3
DB2
DB1
DB0
+5
A 0
A 1
A 2
LKBS
UKBS
UPPER KB
LOWER KB
Decoder
IC1
C1 0.047
C2 0.47
MAIN
CN4


JACK
R2 560
IC1
R7 1K
Q1
CN1
LO
E
IN
SNS
OUT
+5
MAIN
CN2
R8 10K
C5 0.1

JACK (SXPG222711A)

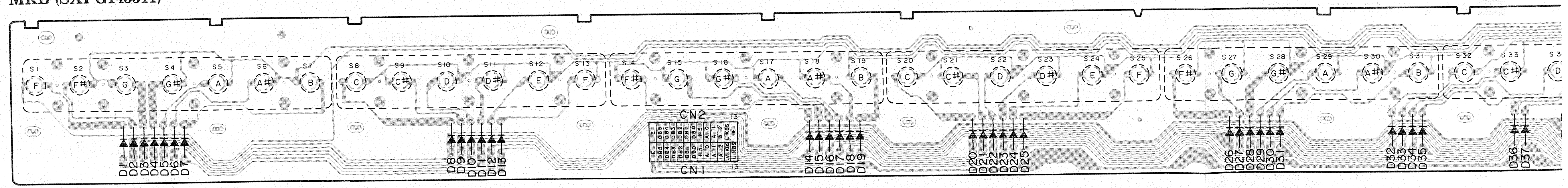

CN1
L1
JK1
R2
C8
C2
LINE OUT
IC1
L4
C5
C3
R7
R8
JP1
JP2
JP3
J2
L2
L3
Q1
Q2
D1
D2
D3
R3
R4
R5
R6
J1
JK3
JK2
MIDI OUT
MIDI IN

JACK

NOTES:

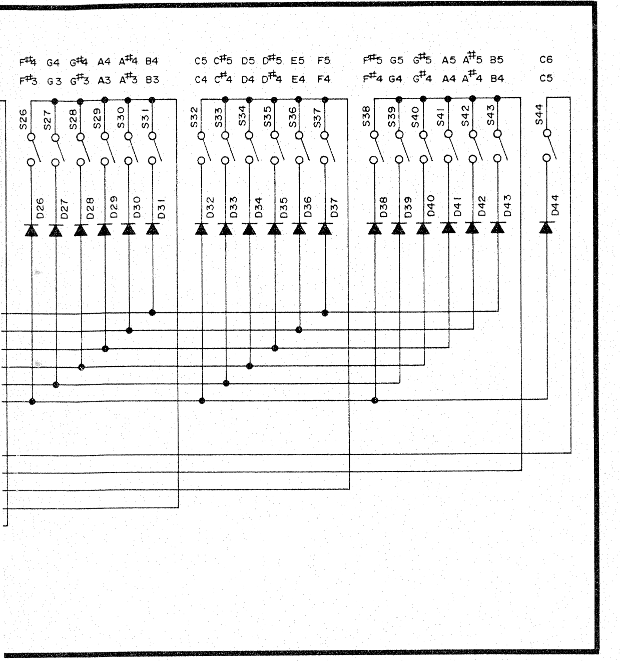
- IC'S
  IC1: QCPL-260L
- TRANSISTORS
  Q1, 2: 2SA1015-GR
- DIODES
  D1~3: MA165

MKB (SXPG145311)

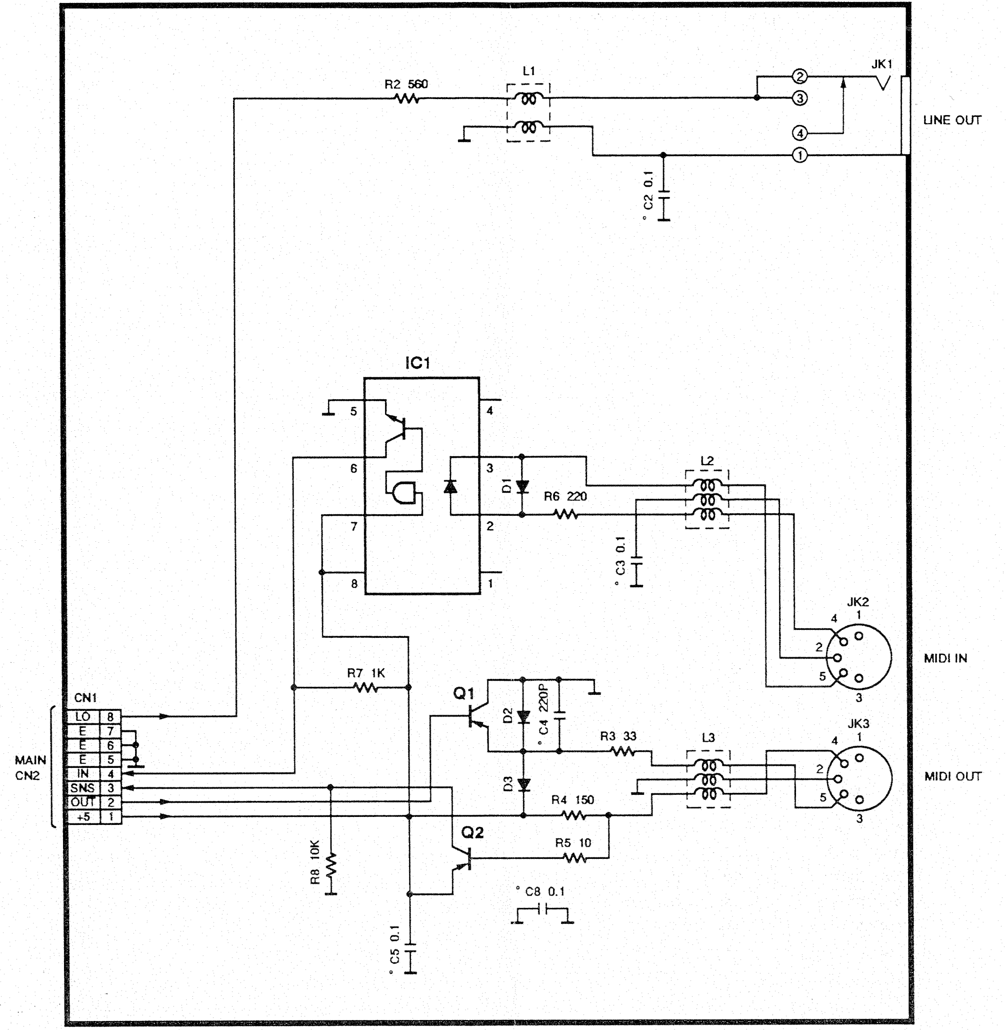

CN2
CN1
S1 F
S2 F#
S3 G
S4 G#
S5 A
S6 A#
S7 B
S8 C
S9 C#
S10 D
S11 D#
S12 E
S13 F
D1 D2 D3 D4 D5 D6 D7
D8 D9 D10 D11 D12 D13
D14 D15 D16 D17 D18 D19
D20 D21 D22 D23 D24 D25
D26 D27 D28 D29 D30 D31
D32 D33 D34 D35
D36 D37

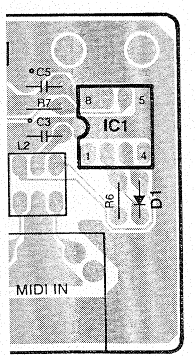
F
E
D
C
B
A

1 2 3 4 5 6 7 8 9 10


F#4 G4 G#4 A4 A#4 B4
F#3 G3 G#3 A3 A#3 B3
C5 C#5 D5 D#5 E5 F5
C4 C#4 D4 D#4 E4 F4
F#5 G5 G#5 A5 A#5 B5
F#4 G4 G#4 A4 A#4 B4
C6
C5
S26 S27 S28 S29 S30 S31 S32 S33 S34 S35 S36 S37 S38 S39 S40 S41 S42 S43 S44
D26 D27 D28 D29 D30 D31 D32 D33 D34 D35 D36 D37 D38 D39 D40 D41 D42 D43 D44

JACK

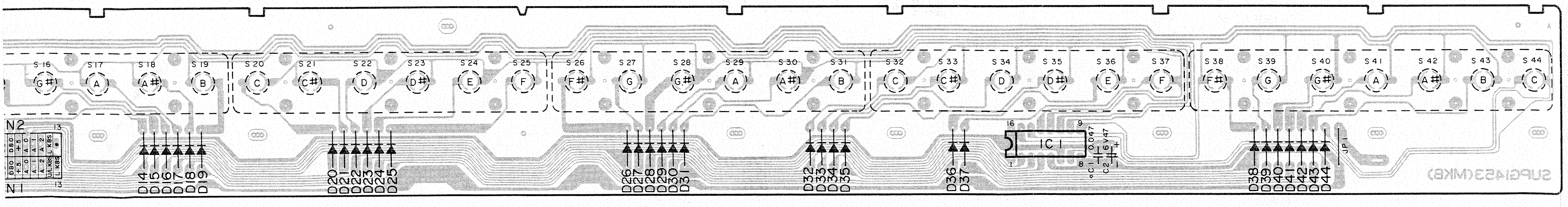

R2 560
L1
JK1
LINE OUT
C2 0.1
IC1
L2
D1
R6 220
C3 0.1
JK2
MIDI IN
CN1
MAIN CN2
LO
E
IN
SNS
OUT
+5
R7 1K
Q1
D2
C4 220P
R3 33
L3
JK3
MIDI OUT
D3
R4 150
Q2
R5 10
R8 10K
C8 0.1
C5 0.1


C5
R7
C3
IC1
L2
R6
D1
MIDI IN

JACK

NOTES:

- IC'S
  IC1: QCPL-260L
- TRANSISTORS
  Q1, 2: 2SA1015-GR
- DIODES
  D1~3: MA165


S16 S17 S18 S19 S20 S21 S22 S23 S24 S25 S26 S27 S28 S29 S30 S31 S32 S33 S34 S35 S36 S37 S38 S39 S40 S41 S42 S43 S44
G# A A# B C C# D D# E F F# G G# A A# B C C# D D# E F F# G G# A A# B C
N2
N1
IC1
C1 0.047
C2 6V47
JP1
D14 D15 D16 D17 D18 D19 D20 D21 D22 D23 D24 D25 D26 D27 D28 D29 D30 D31 D32 D33 D34 D35 D36 D37 D38 D39 D40 D41 D42 D43 D44
SUPG1453(MKB)

MKB

NOTES:

- IC'S
  IC1: SVIGM74LS138
- DIODES
  D1~44: MA162A

REPLACEMENT PARTS LIST......P.C.B. and Wiring Parts

Notes:

1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retension period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.
   After the end of this period, the assembly will no longer be available.
2. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The "S" mark is service standard parts and may differ from production parts.
4. ○ mark are new parts.
5. For part No. with area mark, check the area when placing an order.

■ PRINTED CIRCUIT BOARD

	RTL	Area	Part No.	Description	P/S
○	RTL		SXPG222611	MAIN	1
○	RTL	X XL XR XS XD XT XP EK EZ EW EF EA EH EP	SXPG2170151	AS	1
○	RTL	M MC XM	SXPG2170161	AS	1
○	RTL	XP EK EZ EW EF EA EH EP	SXPG222711B	ACP	1
○	RTL	M MC XM	SXPG222721B	ACP	1
○	RTL	X XS XD XT	SXPG222731B	ACP	1
○	RTL	XL	SXPG222741B	ACP	1
○	RTL	XR	SXPG222751B	ACP	1
○	RTL		SXPG221211C	HP	1
○	RTL	X XL XR XS XD XT XP MC EK EZ EW EF EA EH EP	SXPG221231A	CPSL	1
○	RTL	M XM	SXPG221241A	CPSL	1
	RTL		SXPG145111	PKB	1
	RTL		SXPG103211	EXP	1
	RTL		SXPG145311	MKB	2
○	RTL		SXPG222711A	JACK	1

MAIN MAIN CIRCUIT

	Ref. No.	Part No.	Description	P/S
	INTEGRATED CIRCUITS			
	IC1	D74HC244GS	3 State Buffers	1
	IC2	D70236AGD10	Microcomputer	1
○	IC3	D94137GD-201	Tone Generator LSI	1
	IC4	M5256BFP85LL	256K bit STATIC RAM	1
	IC5	LH52B256N7LL	256K bit Pseudo Static RAM	1
○	IC7	QSIGCEA1AX	4M bit Programmed ROM	1
S	IC7-1	〔HN27C4096G10	(Blank ROM)	1
○	IC8	QSIGCEA1BX	4M bit Programmed ROM	1
S	IC8-1	〔HN27C4096G10	(Blank ROM)	1
○	IC9	TC51832AFL70	256K bit Static RAM	1
	IC10	PCM69AU	D-A Converter	1
○	IC11	QSIGU3C08311	8M bit Programmed ROM	1
	IC12	M5218AFP	Operational Amplifier	1
	TRANSISTORS			
	Q1	2SB709AR	Transistor	1
	Q2	2SD601AQ	Transistor	1
	Q3 ⚠	2SA1643	Transistor	1
S	Q4, 5	2SC1815GR	Transistor	2

	Ref. No.	Part No.	Description	P/S
	DIODES			
	D1, 2	MA165	Diode	2
	D3	MA1030	Zener, 3.0V	1
	D4, 5	MA165	Diode	2
	D6	MA2062LF	Zener, 6.2V	1
	D7	MA701A	Diode	1
	D8	MA110	Diode	1
	D9	MA165	Diode	1
	D10	MA8047	Zener, 4.7V	1
	D11	MA4056	Zener, 5.6V	1
	D12~14	MA165	Diode	3
	OSCILLATORS			
	X1	QSXG1A2000A	20MHz, Quartz Oscillator	1
	X2	QSXG1I3200A	32MHz, Quartz Oscillator	1
	COMPONENT COMBINATIONS			
	Z1	EXBV8V471J	470Ω × 4	1
	Z2	EXBV8V472J	4.7kΩ × 4	1
	Z3, 4	EXBV8V221J	220Ω × 4	2
	Z5~14	EXBV8V151J	150Ω × 4	10
	Z15, 16	EXBS8V151J	150Ω × 4	2
	Z17	EXBV8V151J	150Ω × 4	1
	COIL			
	L1	QLCGTJR10KA	Coil	1
	RESISTORS			
	R1	ERJ6GEYJ103V	10kΩ	1
	R2~4	ERJ6GEYJ221V	220Ω	3
	R5~7	ERJ6GEYJ472V	4.7kΩ	3
	R8	ERJ6GEYJ151V	150Ω	1
	R9	ERJ6GEYJ102V	1kΩ	1
	R13	ERJ6GEYJ221V	220Ω	1
	R14	ERJ6GEYJ222V	2.2kΩ	1
	R15~17	ERJ6GEYJ102V	1kΩ	3
	R18	ERJ6GEYJ103V	10kΩ	1
	R19	ERJ6GEYJ104V	100kΩ	1
	R20	ERJ6GEYJ154V	150kΩ	1
	R21	ERJ6GEYJ102V	1kΩ	1
	R22	ERJ6GEYJ472V	4.7kΩ	1
	R23	ERJ6GEYJ473V	47kΩ	1
	R24	ERJ6GEYJ222V	2.2kΩ	1
	R25	ERJ6GEYJ221V	220Ω	1
	R26	ERJ6GEYJ472V	4.7kΩ	1
	R27	ERJ6GEYJ101V	100Ω	1
	R28	ERJ6GEYJ222V	2.2kΩ	1
	R29	ERJ6GEYJ221V	220Ω	1
	R30	ERJ6GEYJ102V	1kΩ	1

	Ref. No.	Part No.	Description	P/S
	R31	ERJ6GEYJ471V	470Ω	1
	R32, 33	ERJ6GEYJ102V	1kΩ	2
	R34	ERJ6GEYJ822V	8.2kΩ	1
	R36	ERJ6GEYJ682V	6.8kΩ	1
	R37	ERJ6GEYJ273V	27kΩ	1
	R38, 39	ERJ6GEYJ683V	68kΩ	2
	R40	ERJ6GEYJ222V	2.2kΩ	1
	R41	ERJ6GEYJ222V	2.2kΩ	1
	R42	ERJ6GEYJ104V	100kΩ	1
	R43	ERJ6GEY0R00V	0Ω	1
	R44	ERJ6GEYJ101V	100Ω	1
	R45	ERJ6GEYJ331V	330Ω	1
	R46	ERJ6GEYJ331V	330Ω	1
	R47	ERJ6GEYJ471V	470Ω	1
	R48	ERJ6GEYJ103V	10kΩ	1
	R49, 50	ERJ6GEYJ470V	47Ω	2
	R51	ERJ6GEYJ222V	2.2kΩ	1
	R52~54	ERJ6GEYJ221V	220Ω	3
	R55	ERJ6GEYJ101V	100Ω	1
	R61, 62	ERJ6GEYJ223V	22kΩ	2
	R63, 64	ERJ6GEYJ222V	2.2kΩ	2
	CAPACITORS			
	C3~10	ECUV1H104ZFX	0.1μF	8
	C11	ECUV1E224ZFX	0.22μF	1
	C12	ECUV1H101JG	100pF	1
	C13~17, 21, 24~27	ECUV1H104ZFX	0.1μF	10
	C28	ECEA1CKA100	10μF, 16V	1
	C29~31	ECUV1H104ZFX	0.1μF	3
	C32	ECCR1H681J	680pF	1
	C33	ECUV1H104ZFX	0.1μF	1
	C34	ECEA1HKA010	1μF, 50V	1
	C35	ECUV1H222KX	0.0022μF	1
	C36	ECEA1CKN100	10μF, 16V	1
	C37	ECEA0JU102	1000μF, 6.3V	1
	C38	ECUV1H104ZFX	0.1μF	1
	C39	ECUV1H101JG	100pF	1
	C40	ECUV1H104ZFX	0.1μF	1
	C41	ECEA1VKA470	47μF, 35V	1
	C42	ECUV1H104ZFX	0.1μF	1
	C43	ECEA0JKA470	47μF, 6.3V	1
	C44	EECS5R5V105	1F, 5.5V, Memory Back-up	1
	C45, 46	ECUV1H104ZFX	0.1μF	2
	C47	ECEA0JKA470	47μF, 6.3V	1
	C50	ECUV1H100DCN	10pF	1
	C51~63	ECUV1H104ZFX	0.1μF	13
	C64	ECRF1H104ZF	0.1μF	1

AS AMP & POWER SUPPLY CIRCUIT

	Ref. No.	Part No.	Description	P/S
	INTEGRATED CIRCUITS			
	IC1	M5F78M15L	+15V Voltage Regulator	1
	IC2	M5F79M15L	−15V Voltage Regulator	1
	IC7~10	M5218AL	Operational Amplifier	4
	TRANSISTORS			
	Q1	2SC3940ARS	Transistor	1
	Q2	2SA1534AR	Transistor	1
S	Q5, 6	2SA1015-GR	2SA933STRS (SUB. Part)	2

	Ref. No.	Part No.	Description	P/S
S	Q7, 11, 12	2SC1815GR	Transistor	3
S	Q13	2SA1015-GR	2SA933STRS (SUB. Part)	1
S	Q14	2SC1815GR	Transistor	1
S	Q15	2SA1015-GR	2SA933STRS (SUB. Part)	1
	Q16	2SB946P	Transistor	1
	Q17	2SD1271P	Transistor	1
S	Q22	2SA1015-GR	2SA933STRS (SUB. Part)	1
	DIODES			
	D1, 2 ⚠	SVDGERA1502	Rectifier	2
S	D3, 5, 8, 10 ⚠	SVDS3V20	Rectifier	4
	D11, 12	MA4180	Zener, 18V	2
	D15	MA165	Diode	1
	D16, 33	EK04	Diode	2
	D19, 20	MA29WA	Diode	2
	FUSES			
	F5 ⚠	XBA2C20TB0	T2A, 250V, X XL XR XS XD XT XP EK EZ EW EF EA EH EP	1
	F5 ⚠	XBA1C25NU100	2.5A, 125V, M MC XM	1
	RESISTORS			
	R10	ERDS2TJ222	2.2kΩ	1
	R13	ERDS2TJ102	1kΩ	1
	R16	ERDS2TJ184	180kΩ	1
	R25	ERDS2TJ102	1kΩ	1
	R26	ERDS2TJ104	100kΩ	1
	R27	ERDS2TJ184	180kΩ	1
	R28, 31	ERDS2TJ681	680Ω	2
	R32, 41	ERDS2TJ104	100kΩ	2
	R42	ERDS2TJ154	150kΩ	1
	R43	ERDS2TJ220	22Ω	1
	R49	ERDS2TJ102	1kΩ	1
	R50, 51 ⚠	ERD2FCVJ4R7	4.7Ω, 1/4W, Fuse Type	2
	R52, 53	ERDS2TJ103	10kΩ	2
	R54, 55 ⚠	ERQ14AJ2R0	2Ω, 1/4W, Fuse Type	2
	R56 ⚠	ERD2FCVJ6R8	6.8Ω, 1/4W, Fuse Type	1
	R57 ⚠	ERD2FCJ6R8	6.8Ω, 1/4W, Fuse Type	1
	R58~60	ERDS2TJ103	10kΩ	3
	R61, 62	ERDS2TJ472	4.7kΩ	3
	R80	ERDS2TJ222	2.2kΩ	1
	R81	ERDS2TJ104	100kΩ	1
	R83	ERDS2TJ103	10kΩ	1
	R84	ERDS2TJ473	47kΩ	1
	R85	ERDS2TJ332	3.3kΩ	1
	R86	ERDS2TJ124	120kΩ	1
	R89	ERDS2TJ472	4.7kΩ	1
	R90	ERDS2TJ102	1kΩ	1
	R91, 92	ERDS2TJ222	2.2kΩ	2
	R93	ER0S2CKF1541	1.54kΩ	1
	R94, 95	ER0S2CKF1001	1kΩ, ±1%	2
	R96, 97 ⚠	ERD2FCVG101	100Ω, 1/4W, Fuse Type	2
	R98, 99	ERDS2TJ331	330Ω	2
	R100 ⚠	ERD25FVJ4R7	4.7Ω, 1/4W, Flame-Proof	1
	R117	ERDS2TJ331	330Ω	1
	R118 ⚠	ERD2FCVJ6R8	6.8Ω, 1/4W, Fuse Type	1
	R202 ⚠	ERD25FVJ4R7	4.7Ω, 1/4W, Flame-Proof	1
	CAPACITORS			
	C6	ECQB1H473JF	0.047μF	1
	C12	ECQV1H334JM	0.33μF	1
	C13	ECQG1H682KZ	0.0068μF	1

	Ref. No.	Part No.	Description	P/S
	R31	ERJ6GEYJ471V	470Ω	1
	R32, 33	ERJ6GEYJ102V	1kΩ	2
	R34	ERJ6GEYJ822V	8.2kΩ	1
	R36	ERJ6GEYJ682V	6.8kΩ	1
	R37	ERJ6GEYJ273V	27kΩ	1
	R38, 39	ERJ6GEYJ683V	68kΩ	2
	R40	ERJ6GEYJ222V	2.2kΩ	1
	R41	ERJ6GEYJ222V	2.2kΩ	1
	R42	ERJ6GEYJ104V	100kΩ	1
	R43	ERJ6GEY0R00V	0Ω	1
	R44	ERJ6GEYJ101V	100Ω	1
	R45	ERJ6GEYJ331V	330Ω	1
	R46	ERJ6GEYJ331V	330Ω	1
	R47	ERJ6GEYJ471V	470Ω	1
	R48	ERJ6GEYJ103V	10kΩ	1
	R49, 50	ERJ6GEYJ470V	47Ω	2
	R51	ERJ6GEYJ222V	2.2kΩ	1
	R52~54	ERJ6GEYJ221V	220Ω	3
	R55	ERJ6GEYJ101V	100Ω	1
	R61, 62	ERJ6GEYJ223V	22kΩ	2
	R63, 64	ERJ6GEYJ222V	2.2kΩ	2
	CAPACITORS			
	C3~10	ECUV1H104ZFX	0.1μF	8
	C11	ECUV1E224ZFX	0.22μF	1
	C12	ECUV1H101JG	100pF	1
	C13~17, 21, 24~27	ECUV1H104ZFX	0.1μF	10
	C28	ECEA1CKA100	10μF, 16V	1
	C29~31	ECUV1H104ZFX	0.1μF	3
	C32	ECCR1H681J	680pF	1
	C33	ECUV1H104ZFX	0.1μF	1
	C34	ECEA1HKA010	1μF, 50V	1
	C35	ECUV1H222KX	0.0022μF	1
	C36	ECEA1CKN100	10μF, 16V	1
	C37	ECEA0JU102	1000μF, 6.3V	1
	C38	ECUV1H104ZFX	0.1μF	1
	C39	ECUV1H101JG	100pF	1
	C40	ECUV1H104ZFX	0.1μF	1
	C41	ECEA1VKA470	47μF, 35V	1
	C42	ECUV1H104ZFX	0.1μF	1
	C43	ECEA0JKA470	47μF, 6.3V	1
	C44	EECS5R5V105	1F, 5.5V, Memory Back-up	1
	C45, 46	ECUV1H104ZFX	0.1μF	2
	C47	ECEA0JKA470	47μF, 6.3V	1
	C50	ECUV1H100DCN	10pF	1
	C51~63	ECUV1H104ZFX	0.1μF	13
	C64	ECRF1H104ZF	0.1μF	1

AS AMP & POWER SUPPLY CIRCUIT

	Ref. No.	Part No.	Description	P/S
	INTEGRATED CIRCUITS			
	IC1	M5F78M15L	+15V Voltage Regulator	1
	IC2	M5F79M15L	−15V Voltage Regulator	1
	IC7~10	M5218AL	Operational Amplifier	4
	TRANSISTORS			
	Q1	2SC3940ARS	Transistor	1
	Q2	2SA1534AR	Transistor	1
S	Q5, 6	2SA1015-GR	2SA933STRS (SUB. Part)	2
S	Q7, 11, 12	2SC1815GR	Transistor	3
S	Q13	2SA1015-GR	2SA933STRS (SUB. Part)	1
S	Q14	2SC1815GR	Transistor	1
S	Q15	2SA1015-GR	2SA933STRS (SUB. Part)	1
	Q16	2SB946P	Transistor	1
	Q17	2SD1271P	Transistor	1
S	Q22	2SA1015-GR	2SA933STRS (SUB. Part)	1
	DIODES			
	D1, 2 ⚠	SVDGERA1502	Rectifier	2
S	D3, 5, 8, 10 ⚠	SVDS3V20	Rectifier	4
	D11, 12	MA4180	Zener, 18V	2
	D15	MA165	Diode	1
	D16, 33	EK04	Diode	2
	D19, 20	MA29WA	Diode	2
	FUSES			
	F5 ⚠	XBA2C20TB0	T2A, 250V, X XL XR XS XD XT XP EK EZ EW EF EA EH EP	1
	F5 ⚠	XBA1C25NU100	2.5A, 125V, M MC XM	1
	RESISTORS			
	R10	ERDS2TJ222	2.2kΩ	1
	R13	ERDS2TJ102	1kΩ	1
	R16	ERDS2TJ184	180kΩ	1
	R25	ERDS2TJ102	1kΩ	1
	R26	ERDS2TJ104	100kΩ	1
	R27	ERDS2TJ184	180kΩ	1
	R28, 31	ERDS2TJ681	680Ω	2
	R32, 41	ERDS2TJ104	100kΩ	2
	R42	ERDS2TJ154	150kΩ	1
	R43	ERDS2TJ220	22Ω	1
	R49	ERDS2TJ102	1kΩ	1
	R50, 51 ⚠	ERD2FCVJ4R7	4.7Ω, 1/4W, Fuse Type	2
	R52, 53	ERDS2TJ103	10kΩ	2
	R54, 55 ⚠	ERQ14AJ2R0	2Ω, 1/4W, Fuse Type	2
	R56 ⚠	ERD2FCVJ6R8	6.8Ω, 1/4W, Fuse Type	1
	R57 ⚠	ERD2FCJ6R8	6.8Ω, 1/4W, Fuse Type	1
	R58~60	ERDS2TJ103	10kΩ	3
	R61, 62	ERDS2TJ472	4.7kΩ	3
	R80	ERDS2TJ222	2.2kΩ	1
	R81	ERDS2TJ104	100kΩ	1
	R83	ERDS2TJ103	10kΩ	1
	R84	ERDS2TJ473	47kΩ	1
	R85	ERDS2TJ332	3.3kΩ	1
	R86	ERDS2TJ124	120kΩ	1
	R89	ERDS2TJ472	4.7kΩ	1
	R90	ERDS2TJ102	1kΩ	1
	R91, 92	ERDS2TJ222	2.2kΩ	2
	R93	ER0S2CKF1541	1.54kΩ	1
	R94, 95	ER0S2CKF1001	1kΩ, ±1%	2
	R96, 97 ⚠	ERD2FCVG101	100Ω, 1/4W, Fuse Type	2
	R98, 99	ERDS2TJ331	330Ω	2
	R100 ⚠	ERD25FVJ4R7	4.7Ω, 1/4W, Flame-Proof	1
	R117	ERDS2TJ331	330Ω	1
	R118 ⚠	ERD2FCVJ6R8	6.8Ω, 1/4W, Fuse Type	1
	R202 ⚠	ERD25FVJ4R7	4.7Ω, 1/4W, Flame-Proof	1
	CAPACITORS			
	C6	ECQB1H473JF	0.047μF	1
	C12	ECQV1H334JM	0.33μF	1
	C13	ECQG1H682KZ	0.0068μF	1
	C14	ECQV1H683JM	0.068μF	1
	C16	ECQG1H332KZ	0.0033μF	1
	C17	ECQB1H473JF	0.047μF	1
	C18	ECQG1H332KZ	0.0033μF	1
	C19	ECQB1H223JF	0.022μF	1
	C20	ECQG1H102KZ	0.001μF	1
	C25	ECCR1H220J	22pF	1
	C28 ⚠	ECQE1A104M6	0.1μF, 125V	1
	C29	ECEA1VU332	3300μF, 35V	1
	C32	ECEA1VU222	2200μF, 35V	1
	C36, 37	ECRF1H104ZF	0.1μF	2
	C38	ECEA1CKA100	10μF, 16V	1
	C39	ECEA1CU331	330μF, 16V	1
	C49	ECEA1HKN2R2	2.2μF, 50V	1
	C50	ECQB1H223JF	0.022μF	1
	C51	ECQV1H104JM	0.1μF	1
	C60	ECEA50Y2R2	2.2μF, 50V	1

ACP AC POWER SUPPLY CIRCUIT

	Ref. No.	Part No.	Description	P/S
	LINE FILTER			
	L1 ⚠	SLTGLF3	Line Filter	1
	JACKS			
	JK1	SJVD0203B	AC Inlet	1
	JK2	QJSG002AA	PEDAL JACK	1
	SWITCH			
	S1 ⚠	SSRG100A	Voltage Selector, X XR XS XD XT	1
	FUSES			
	F1 ⚠	XBA1C40NU100	4A, 125V, M MC XM	1
	F1 ⚠	XBA2C16TB0	T1.6A, 250V, X XD XT XS XR	1
	F2 ⚠	XBA2C10TB0	T1.0A, 250V, X XD XT XS XR	1
	F3 ⚠	XBA2C10TB0	T1.0A, 250V, EZ EK EW EF EA EP EH XP X XD XT XS XL XR	1
	CAPACITORS			
	C1 ⚠	ECQU2A104MN	0.1μF, 250V, Across-the Line Capacitor, M MC XM X XD XT XS XR	1
	C1 ⚠	ECQU2A104MT	0.1μF, 250V, Across the Line Capacitor, EZ EK EW EF EA EP EH XP XL	1
	C2 ⚠	ECKCVA1472MF	4700pF, Line Capacitor	1
	C3	ECRF1H104ZF	0.1μF	1

HP HEADPHONES CIRCUIT

	Ref. No.	Part No.	Description	P/S
	COIL			
	L1	QLQGT2T150SA	Coil	1
	JACK			
	JK1	SJJG100A	HEAD PHONE JACK	1
	RESISTORS			
	R1, 2	ERG1SJ680	68Ω, 1W, Flame-Ploof	2
	CAPACITORS			
	C1	ECCR1H471J	470pF	1
	C2	ECQV1H104JM	0.1μF	1
	C3	ECRF1H104ZF	0.1μF	1

CPSL LOWER CONTROL PANEL CIRCUIT

	Ref. No.	Part No.	Description	P/S
	INTEGRATED CIRCUITS			
	IC1	M37471M2196S	16 bit Microcomputer	1
	IC2	H74LS138FPTR	Decoder	1
	IC3~5	M74LS07FP	Hex Buffers	3
	TRANSISTORS			
	Q1~8	2SA830SB	Transistor	8
	DIODES			
	D1~15, 17~22, 24~30, 33~40, 45~53, 55~69, 71~88, 91~96	MA165	Diode	84
	D31	MA165	Diode, M XM	1
	D201~213, 215, 217, 220, 224~228, 230~236, 239~243, 245~251, 254~258, 260, 261, 265~271, 285~287, 317, 318, 414, 418, 419, 429, 438, 444, 452, 453, 459	LN282R	LED (Red)	68
	D216, 221, 222, 284, 301, 302, 315, 316, 499, 514	LN382G	LED (Green)	10
	DISPLAY			
	LD1	LB603VF	Triple 8 Segments Display	1
	OSCILLATOR			
	X1	EF0EC4004A3	4MHz, Ceramic Oscillator	1

	Ref. No.	Part No.	Description	P/S
	COMPONENT COMBINATION			
	Z1	EXBPI8472JM	4.7kΩ×8	1
	SWITCHES			
	S1~10, 12~15, 17~22, 24~30, 33~40, 45~53, 55~69, 71~88, 91~96	EVQ21907K	Push Switch	83
	IC PROTECTOR			
	IP1 ⚠	ICP-N10T104	IC Protector	1
	VARIABLE RESISTOR			
	VR1	QRVG25N01B53	5kΩ B, MAIN	1
	RESISTORS			
	R1~15	ERDS2TJ680	68Ω	15
	R16~24	ERDS2TJ472	4.7kΩ	9
	R26	ERDS2TJ333	33kΩ	1
	R27	ERDS2TJ102	1kΩ	1
	R28	ERDS2TJ221	220Ω	1
	R31	ERDS2TJ184	180kΩ	1
	R32~34, 36	ERDS2TJ123	12kΩ	4
	R37	ERDS2TJ101	100Ω	1
	CAPACITORS			
	C1	ECEA0JKA331	330μF, 6.3V	1
	C2	ECRF1H104ZF	0.1μF	1
	C3	ECQV1H104JM	0.1μF	1
	C4, 7	ECEA0JKA470	47μF, 6.3V	2
	C8~10	ECQV1H104JM	0.1μF	3
	C11	ECRF1H104ZF	0.1μF	1

PKB PEDAL KEYBOARD CIRCUIT

	Ref. No.	Part No.	Description	P/S
	TRANSISTORS			
S	Q1, 2, 4	2SA1015-GR	2SA933STRS (SUB. Part)	3
S	Q5~17	2SC2320LFG	2SC1310FG (SUB. Part)	13
	RESISTORS			
	R1, 2	ER0S2CKF4700	470Ω, ±1%	2
	R3	ERDS2TJ472	4.7kΩ	1
	R5	ER0S2CKF4700	470Ω, ±1%	1
	R7	ERDS2TJ472	4.7kΩ	1
	R8	ERDS2TJ103	10kΩ	1
	R9	ERDS2TJ472	4.7kΩ	1
	R10	ERDS2TJ103	10kΩ	1
	R11	ERDS2TJ472	4.7kΩ	1
	R12	ERDS2TJ103	10kΩ	1
	R13	ERDS2TJ472	4.7kΩ	1
	R14	ERDS2TJ103	10kΩ	1
	R15	ERDS2TJ472	4.7kΩ	1
	R16	ERDS2TJ103	10kΩ	1
	R17	ERDS2TJ472	4.7kΩ	1
	R18	ERDS2TJ103	10kΩ	1
	R19	ERDS2TJ472	4.7kΩ	1
	R20	ERDS2TJ103	10kΩ	1
	R21	ERDS2TJ472	4.7kΩ	1
	R22	ERDS2TJ103	10kΩ	1
	R23~29	ER0S2CKF4700	470Ω, ±1%	7
	R30	ER0S2CKF1001	1kΩ, ±1%	1
	R32	ERDS2TJ472	4.7kΩ	1
	R33	ERDS2TJ103	10kΩ	1
	R34	ERDS2TJ472	4.7kΩ	1
	R35	ERDS2TJ103	10kΩ	1
	R36	ERDS2TJ472	4.7kΩ	1
	R37	ERDS2TJ103	10kΩ	1
	R38	ERDS2TJ472	4.7kΩ	1
	R39	ERDS2TJ103	10kΩ	1
	R40	ERDS2TJ472	4.7kΩ	1
	R41	ERDS2TJ103	10kΩ	1
	R42~45	ER0S2CKF4700	470Ω, ±1%	4
	R46	ER0S2CKF2201	2.2kΩ, ±1%	1
	R51	ERDS2TJ472	4.7kΩ	1

EXP EXPRESSION CIRCUIT

	Ref. No.	Part No.	Description	P/S
	CDS			
	CS1	SVEG5	Light Sensitive Device	1

MKB MANUAL KEYBOARD CIRCUIT

	Ref. No.	Part No.	Description	P/S
	INTEGRATED CIRCUIT			
	IC1	SVIGM74LS138	Decoder	1
	DIODES			
S	D1~44	MA162A	MA150IR (SUB. Part)	44
	CAPACITORS			
	C1	ECKR1E473ZV	0.047μF	1
	C2	ECEA0JK470	47μF, 6.3V	1

JACK JACK CIRCUIT

	Ref. No.	Part No.	Description	P/S
	INTEGRATED CIRCUIT			
	IC1	QCPL-260L	Photo Coupler	1
	TRANSISTORS			
S	Q1, 2	2SA1015-GR	2SA933STRS (SUB. Part)	2

Ref. No.	Part No.	Description	P/S
DIODES			
D1~3	MA165	Diode	3
COILS			
L1	QLQGT2T150SA	Coil	1
L2, 3	QLQGT3T150SA	Coil	2
JACKS			
JK1	QJJG003AA	LINE OUT	1
JK2	SJSG1370A	MIDI IN	1
JK3	SJSG1370A	MIDI OUT	1
RESISTORS			
R2	ERDS2TJ561	560Ω	1
R3	ERDS2TJ330	33Ω	1
R4	ERDS2TJ151	150Ω	1
R5	ERDS2TJ100	10Ω	1
R6	ERDS2TJ221	220Ω	1
R7	ERDS2TJ102	1kΩ	1
R8	ERDS2TJ103	10kΩ	1
CAPACITORS			
C2, 3	ECRF1H104ZF	0.1µF	2
C4	ECCR1H221J	220pF	1
C5, 8	ECRF1H104ZF	0.1µF	2

■ WIRING PARTS

Ref. No.	Part No.	Description	P/S
W1	QEXGSS13030A	Connector with Wire	1
○ W2	QEXGSS13065A	Connector with Wire	1
○ W3	QEXGSA10110A	Connector with Wire	1
○ W4	QEXGSA07045B	Connector with Wire	1
W5	QEXGEL03120B	Connector with Wire	1
W6	QEXGZA08100E	Connector with Wire	1
○ W7	QEXGSS06120B	Connector with Wire	1
○ W8	QEXGVH06080E	Connector with Wire	1
W9	QEXGVH03160B	Connector with Wire	1
W10	SWKG04158LSA	Connector with Wire	1
W11	QEXGLT04045B	Connector with Wire	1

REPLACEMENT PARTS LIST......Upper Cabinet

Notes:

1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retension period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.
   After the end of this period, the assembly will no longer be available.
2. ○ mark are new parts.
3. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
4. For part No. with area mark, check the area when placing an order.
5. The raw material indication for synthtic resin
   In order to facilitate classification of parts of synthetic resin manufacture and to promote the recycling of natural resources, a raw material symbol for such parts is indicated in the Ref. No./Material column.

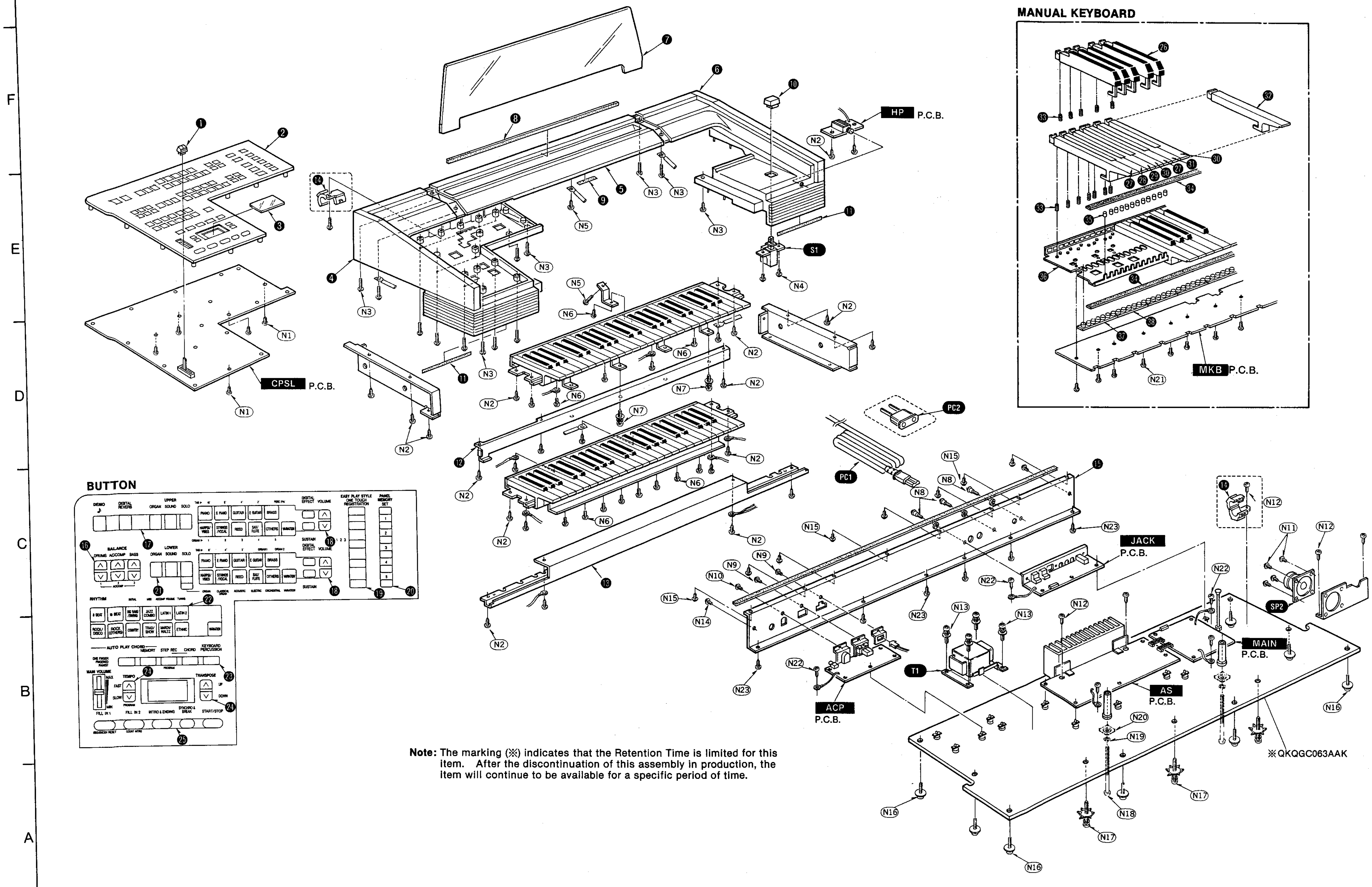
■ CABINET & CHASSIS PARTS

	Ref. No.		Part No.	Description	P/S
			SWITCH		
	S1	⚠	ESB8273V	Power Switch	1
			SPEAKER		
	SP2		EAS65PH31A3	6.5cm, 8Ω	1
			TRANSFORMER		
	T1	⚠	QTPG1M025A	Power Transformer, X XS XD XT EK XR EZ EW EF EA EH EP	1
	T1	⚠	QTPG1M022A	Power Transformer, M MC XM	1
	T1	⚠	QTPG1M024A	Power Transformer, XL XP	1
			POWER CORD & PLUG		
	PC1	⚠	SJAG65	Power Cord, X XS XT XP EH EZ EW EF EA EP	1
	PC1	⚠	VJA0733	Power Cord, XD EK	1
	PC1	⚠	QJAG013AA	Power Cord, M MC XM	1
	PC1	⚠	QJAG014AA	Power Cord, XL XR	1
	PC2	⚠	SJP5213-1	Attachment Plug, XT XP	1
			CABINET PARTS		
	1		SBNG7031A	Knob	1
○	2	PS	QGPG0091AC	Control Panel Left	1
	3		QKWG005AA	Display Cover Panel	1
○	4		SYWG8153E	Cover Panel Left, X XS XD XT MC XL XP XR EZ EW EF EA EH EP	1
○	4		SYWG8153F	Cover Panel Left, M XM EK	1
○	5		SGWG1822E	Cover Panel Front	1
○	6		SYWG8165E	Cover Panel Right, X XS XD XT MC XL XP XR EZ EW EF EA EH EP	1
○	6		SYWG8165F	Cover Panel Right,	1
○	7		QYAG2005AD	Music Stand, M XM EK	1
	8		SHRGA7320A	Rubber Cushion	1

	Ref. No.		Part No.	Description	P/S
	9		SHSG1670A	Felt	1
	10		SBCG110B	Button, Power Switch	1
	11		SHSG4930A	Felt	2
	12		SGXG2481A	Ornament	1
○	13		SGXG2471F	Ornament	1
	14		QLZG006A	Core, M MC XM	2
○	15		SGXG2498A	Jack Panel, X XR XS XD XT	1
○	15		SGXG2499A	Jack Panel, M XL XP XM MC EK EZ EW EF EA EH EP	1
○	16		QGUG1318AB01	Button	1
○	17		QGUG1336ACK	Button	1
○	18		QGUG1339CB01	Button	2
○	19		QGUG1334ABK	Button	1
○	20		QGUG1345AAK	Button	1
○	21		QGUG1340ACK	Button	1
○	22		QGUG1337BB01	Button	1
○	23		QGUG1338CBK	Button	1
○	24		QGUG1342AA01	Button	2
○	25		QGUG1343ABK	Button	1
			MANUAL KEYBOARD		
	26	AS	STBG2071A	Black Key	36
	27	AS	STBG1101A	White Key (C and F Key)	14
	28	AS	STBG1131A	White Key (G Key)	8
	29	AS	STBG1141A	White Key (A Key)	8
	30	AS	STBG1121A	White Key (E and B Key)	14
	31	AS	STBG1111A	White Key (D Key)	6
	32	AS	STBG1151A	White Key (Top Octave C Key)	2
	33		SUSG271A	Spring	88
	34		SHSG1931A	Felt	4
	35		SHGG9052A	Key Guide Rubber	88
	36		STBG6104A	Chassis	2
	37		SSPG7001A	Rubber Switch (7 pcs. on one)	4
	38		SSPG6001A	Rubber Switch (6 pcs. on one)	10
			SCREWS & WASHERS		
	N1		XTV3+10G	Screw	5
	N2		XTB4+12A	Screw	24
	N3		XTW3+14Q	Screw	20
	N4		XTBS26+10J	Screw	2
	N5		XTW3+10Q	Screw	2

Ref. No.	Part No.	Description	P/S
N6	XTB3 +5C	Screw	15
N7	XYN5 +C10	Screw with Washer	2
N8	SNEG1241A	Screw	3
N9	XTW3 +8JFZ	Screw	2
N10	XTW3 +8JFZ	Screw, X XR XS XD XT	1
N11	XTW3 +6J	Screw	4
N12	XTB35+8A	Screw	4
N13	XYN4 +F12	Screw with Washer	4
N14	XTW3 +8JFVC	Screw	2
N15	XTW3 + 12QFVC	Screw	8
N16	SNEG1810B	Screw with Washer	8
N17	QHDG021AA	Screw with Washer	3
N18	XSN5 +85FVC	Screw	2
N19	SNEG150A	Washer	2
N20	XWA5B	Washer	2
N21	XTW3 + 10T	Screw	24
N22	SNEG2660A	Screw	5
N23	XTB35+ 10AFZ	Screw	4

CABINET PARTS LOCATION


MANUAL KEYBOARD
BUTTON
HP P.C.B.
CPSL P.C.B.
MKB P.C.B.
JACK P.C.B.
MAIN P.C.B.
AS P.C.B.
ACP P.C.B.
S1
PC1
PC2
T1
SP2
※QKQGC063AAK
N1
N2
N3
N4
N5
N6
N7
N8
N9
N10
N11
N12
N13
N14
N15
N16
N17
N18
N19
N20
N21
N22
N23
DEMO
DIGITAL REVERB
UPPER
ORGAN SOUND SOLO
LOWER
BALANCE
DRUMS ACCOMP BASS
DIGITAL EFFECT VOLUME
SUSTAIN
EASY PLAY STYLE ONE TOUCH REGISTRATION
PANEL MEMORY SET
PIANO
E.PIANO
GUITAR
E.GUITAR
BRASS
HARPS/VIBES
STRINGS/VOCAL
REED
SAX/FLUTE
OTHERS
VARIATION
RHYTHM
AUTO PLAY CHORD
MEMORY
STEP REC
CHORD
KEYBOARD PERCUSSION
MAIN VOLUME
MAX
MIN
TEMPO
FAST
SLOW
TRANSPOSE
UP
DOWN
FILL IN 1
FILL IN 2
INTRO & ENDING
SYNCHRO & BREAK
START/STOP
F
E
D
C
B
A
1
2
3
4
5
6
7
8
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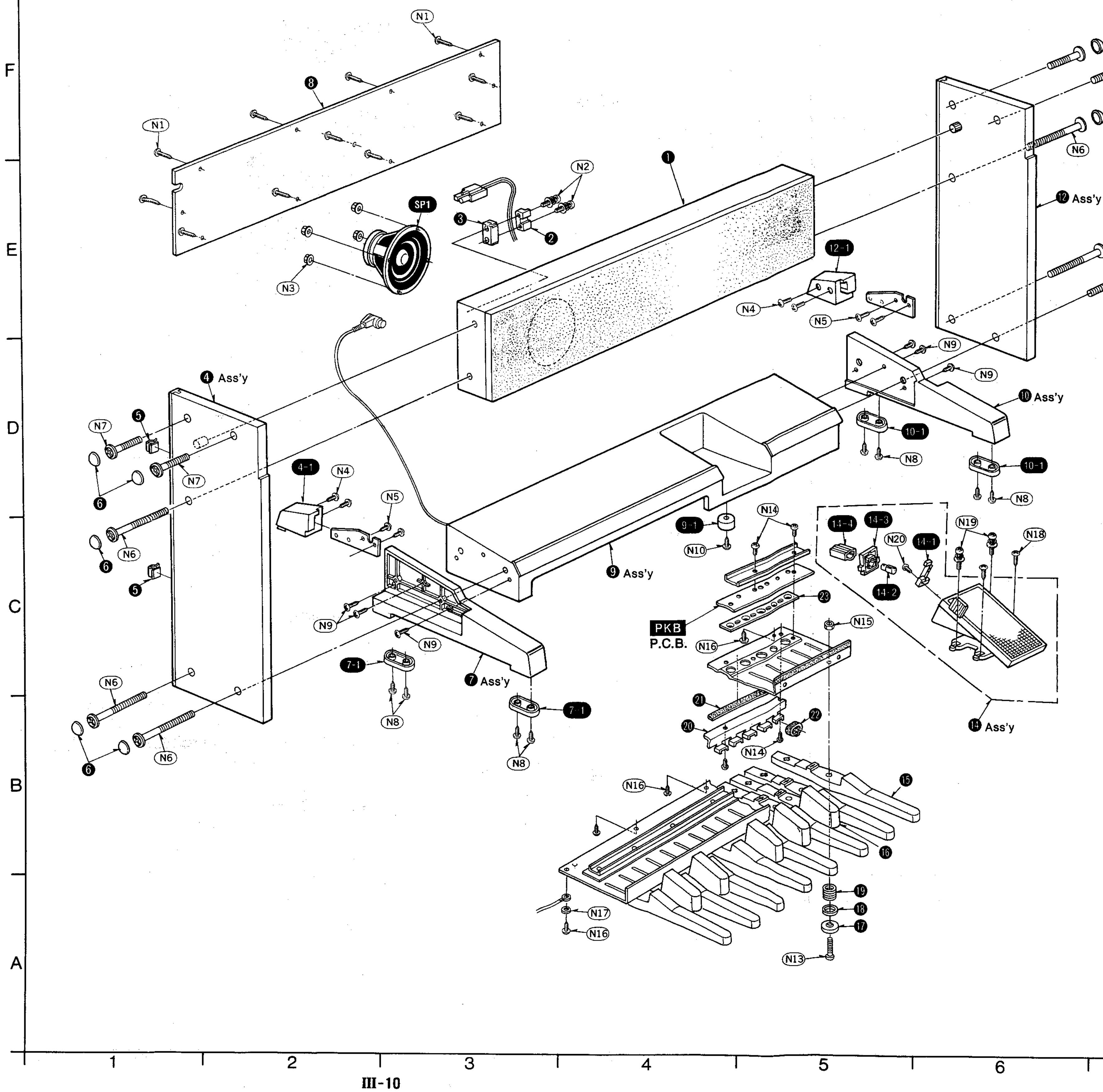
Note: The marking (※) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time.

CABINET PARTS LOCATION


N1
8
N1
N2
SP1
3
2
1
6
N7
N6
6
12 Ass'y
12-1
6
N6
N3
N4
N5
N9
N9
10 Ass'y
10-1
N8
10-1
N8
4 Ass'y
6
N7
N7
6
4-1
N4
N5
N6
6
5
9-1
N10
N14
9 Ass'y
14-4
14-3
N20
14-1
N19
N18
14-2
23
PKB
P.C.B.
N16
N15
N9
N9
7-1
7 Ass'y
N8
7-1
N8
N6
N6
6
21
22
20
N14
14 Ass'y
15
N16
16
19
18
17
N17
N16
N13
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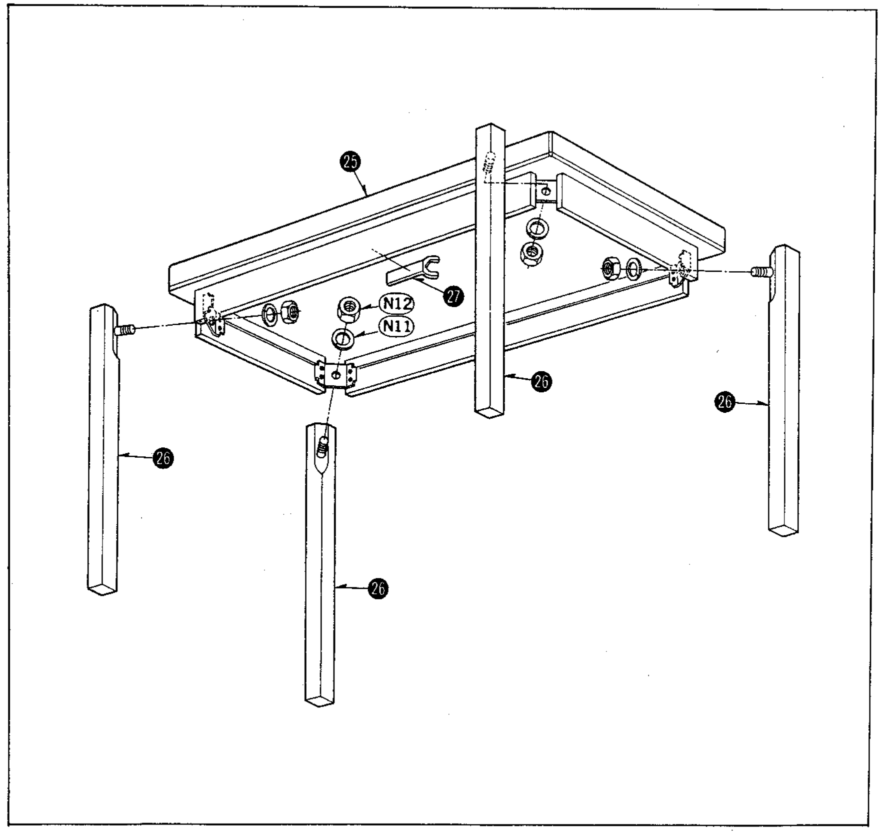
■**BENCH**


25
27
N12
N11
26
26
26
26

REPLACEMENT PARTS LIST......Stand and Bench

Notes:

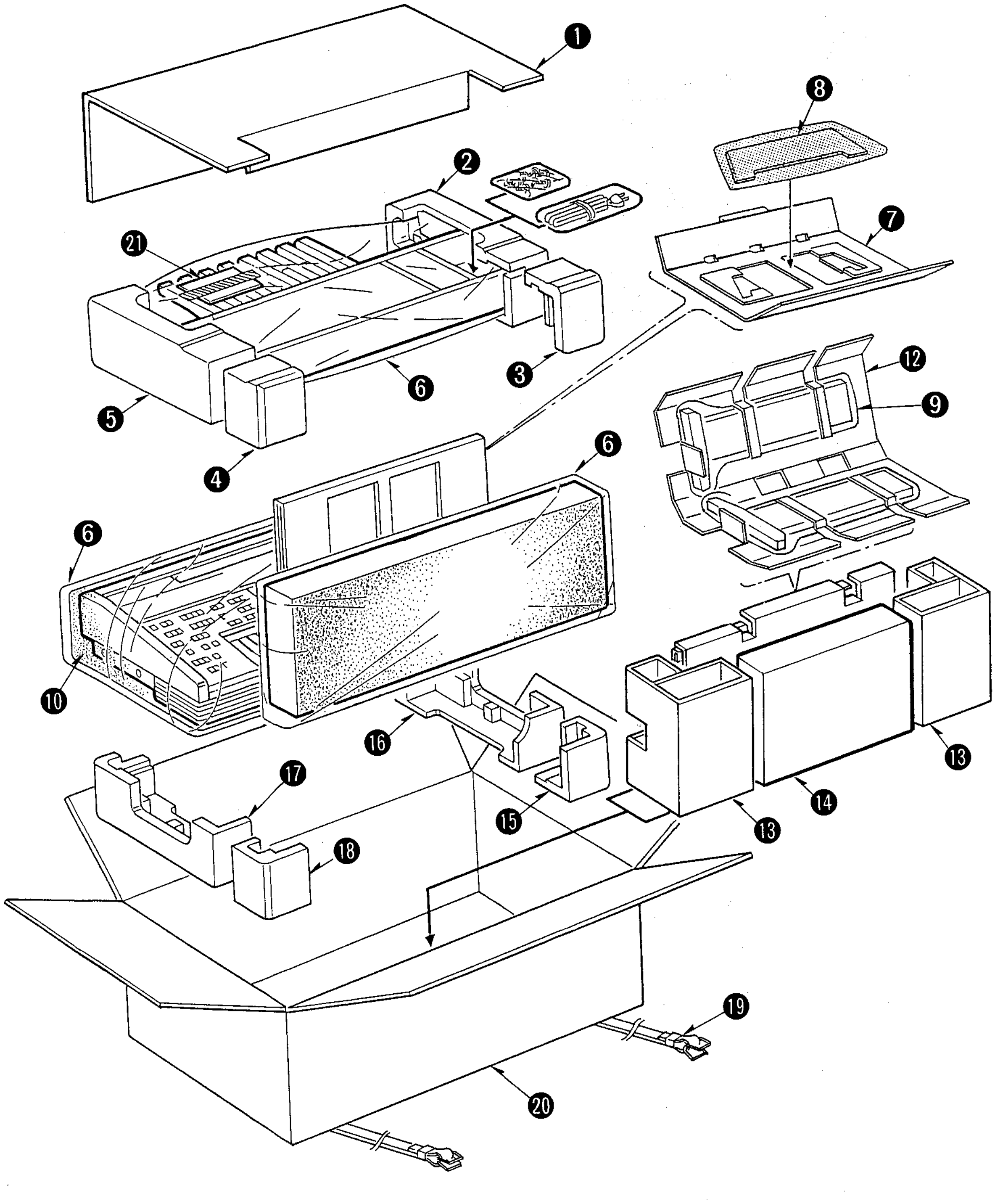
1. The marking (RTL) indicates that the Retention Time is limited for this item. After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retension period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.
   After the end of this period, the assembly will no longer be available.
2. ○ mark are new parts.
   Cabinet Colour
3. Important safety notice
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
4. For part No. with area mark, check the area when placing an order.
5. The raw material indication for synthtic resin
   In order to facilitate classification of parts of synthetic resin manufacture and to promote the recycling of natural resources, a raw material symbol for such parts is indicated in the Ref. No./Material column.

■ CABINET & CHASSIS PARTS

	Ref. No.		Part No.	Description	P/S
SWITCH					
	SP1		EAS20PL255B	20cm, 6Ω	1
CABINET PARTS					
○	1		QKQGL041AAK	Speaker Box	1
	2		SHRG1110A	Cord Clamper	1
	3		SHRG1120A	Cord Clamper	1
○	4		QKQGB360AA	Left Plank Ass'y, X XL XR XS XD XT XP MC EZ EW EF EA EH EP	1
	4-1	ABS	⟦ SKLG190A	Leg, X XL XR XS XD XT XP MC EZ EW EF EA EH EP	1
○	4		QKQGB360AB	Left Plank Ass'y, M XM EK	1
	4-1	ABS	SKLG190B	Leg, M XM EK	1
	5		SHRG9620A	Cord Clamper	2
	6		SNEG1760A	Cap, X XL XR XS XD XT XP MC EZ EW EF EA EH EP	10
	6		SNEG1760B	Cap, M XM EK	10
	7		SKLG174A	Leg, Left, X XL XR XS XD XT XP MC EZ EW EF EA EH EP	1
	7-1	PP	⟦ SHRG2130B	Foot, X XL XR XS XD XT XP MC EZ EW EF EA EH EP	2
	7		SKLG174B	Leg, Left, M XM EK	1
	7-1	PP	⟦ SHRG2130B	Foot, M XM EK	2
○	8		QKUG1037AAK	Rear Board, Speaker Box	1
○	9		QKQGM061AAK	Pedal Box	1
	9-1		⟦ QKAG0004AA	Foot	1
	10		SKLG184A	Leg, Right, X XL XR XS XD XT XP MC EZ EW EF EA EH EP	1
	10-1	PP	⟦ SHRG2130B	Foot, X XL XR XS XD XT XP MC EZ EW EF EA EH EP	2
	10		SKLG184B	Leg, Right, M XM EK	1
	10-1	PP	⟦ SHRG2130B	Foot, M XM EK	2
○	12		QKQGB361AA	Right Plank Ass'y, X XL XR XS XD XT XP MC EZ EW EF EA EH EP	1
	12-1	ABS	⟦ SKLG200A	Leg, X XL XR XS XD XT XP MC EZ EW EF EA EH EP	1
○	12		QKQGB361AB	Right Plank Ass'y, M XM EK	1
	12-1	ABS	⟦ SKLG200B	Leg, M XM EK	1
	14		SXVG5140A	Expression Pedal Ass'y	1
	14-1		⎡ SSHG14	Foot Switch	1
	14-2		⎢ XAMR55P	Lamp	1
	14-3		⎢ SHGG908	Lamp Holding Rubber	1
	14-4		⎣ RJS205ZA	Socket	1
	15	AS	STBG1091C	White Key	8
	16	AS	STBG2052A	Black Key	5
	17		SHRG9240A	Spacer	13
	18		SHGG8130A	Rubber	13
	19		SUSG180A	Spring	13
	20		STBG4011A	Key Guide	1
	21		SHSG1600B	Felt	1
	22		SHSG1460A	Felt	13
	23		SHGG50A	Rubber Switch (5 pcs. on one)	3
BENCH					
	25		QKQGA055AB	Seat, M XM	1
	25		QKQGA033ABK	Seat, EK	1
○	25		QKQGA033ACK	Seat, X XL XR XS XD XT XP MC EZ EW EF EA EH EP	1
	26		QKQGZ083AA	Leg, M XM	4
	26		QKQGZ044AAK	Leg, EK	4
○	26		QKQGZ044ABK	Leg, X XL XR XS XD XT XP MC EZ EW EF EA EH EP	4
	27		SBEG190A	Spanner, M XM	1
	27		QFBG007AA	Spanner, EK X XL XR XS XD XT XP MC EZ EW EF EA EH EP	1

Ref. No.	Part No.	Description	P/S
SCREWS & WASHERS			
N1	XTT35+25AFZ	Screw	11
N2	XYN3+F25	Screw with Washer	2
N3	SNE499-1	Nut	4
N4	XST4+20FVC	Screw, X XL XR XS XD XT XP MC EZ EW EF EA EH EP	4
N4	XST4+20FZ	Screw, M XM EK	4
N5	XTS4+20A	Screw	4
N6	SNEG1720A	Screw, X XL XR XS XD XT XP MC EZ EW EF EA EH EP	6
N6	SNEG1720B	Screw, M XM EK	6
N7	SNEG1820A	Screw, M XM EK	4
N7	SNEG1820B	Screw, X XL XR XS XD XT XP MC EZ EW EF EA EH EP	4
N8	XTV3+16G	Screw	8
N9	XTT4+20A	Screw	6
N10	XTB35+20A	Screw	1
N11	XWB10B	Washer, EK X XL XR XS XD XT XP MC EZ EW EF EA EH EP	4
N11	XWG10B	Washer, M XM	4
N12	XNH10G	Nut	4
N13	SNEG360A	Screw	13
N14	XTB3+6B	Screw	11
N15	XNG5BS	Nut	13
N16	XTT4+16A	Screw	4
N17	XWA4B	Washer	1
N18	XTT4+16AFZ	Screw	2
N19	XYN4+F20FZ	Screw with Washer	2
N20	XTN26+6B	Screw	1

PACKING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■ PACKING PARTS

Ref. No.	Part No.	Description	P/S
	PACKING PARTS		
○ 1	QPGG0320AA	Top Pad	1
2 PS	SPNG5649C	Corner Pad	1
3 PS	SPNG5649B	Corner Pad	1
4 PS	SPNG5648B	Corner Pad	1
5 PS	SPNG5648C	Corner Pad	1
6 PE	SPHG1630A	Polyethylene Bag	3
○ 7	QPGG0321AA	Carton, Music Stand	1
8 PE	QPHG039AA	Protection Cover	1
9 PE	SPHG1641A	Polyethylene Bag	2
10 PE	SPHG1660A	Protection Sheet	1
○ 12	QPGG0323AA	Carton, Planks	1
○ 13	QPGG0322AA	Pad, X XL XR XS XD XT XP MC EK EZ EW EF EA EH EP	2
○ 13	QPGG0324AA	Pad, M XM	2
○ 14	QPGG0098AAK	Bench Case, X XL XR XS XD XT XP MC EK EZ EW EF EA EH EP	1
14	QPGG0219AB	Bench Case M XM	1
15 PS	SPNG5647B	Corner Pad	1
16 PS	SPNG5647C	Corner Pad	1
17 PS	SPNG5646C	Corner Pad	1
18 PS	SPNG5646B	Corner Pad	1
19	SPSG40A	Band	2
○ 20	QPGG0319AA	Carton	2
	INSTRUCTION BOOK		
○ 21	QQFGEA1AA	Operating instruction manual, XS XR XL EK	1
○ 21	QQFGEA1BA	Operating instruction manual, M	1
○ 21	QQFGEA1CA	Operating instruction manual, MC	1
○ 21-1	QQTG0323A	ENGLISH	1
○ 21-2	QQTG0325A	FRANCIAS	1
○ 21	QQFGEA1DA	Operating instruction manual, EZ EA	1
○ 21	QQFGEA1EA	Operating instruction manual, EW	1
○ 21-1	QQTG0323A	ENGLISH	1
○ 21-2	QQTG0325A	FRANCIAS	1
○ 21-3	QQTG0326A	DEUTSCH	1
○ 21	QQFGEA1FA	Operating instruction manual, EF	1
○ 21	QQFGEA1GA	Operating instruction manual, EP XM XP	1
○ 21-1	QQTG0323A	ENGLISH	1
○ 21-2	QQTG0327A	ESPANOL	1
○ 21	QQFGEA1HA	Operating instruction manual, EH	1
○ 21-1	QQTG0325A	FRANCIAS	1
○ 21-2	QQTG0326A	DEUTSCH	1
○ 21-3	QQTG0328A	NERDERLANDS	1
○ 21	QQFGEA1JA	Operating instruction manual, X	1
○ 21-1	QQTG0323A	ENGLISH	1
○ 21-2	QQTG0327A	ESPANOL	1
○ 21-3	QQTG0329A	中文	1
○ 21	QQFGEA1KA	Operating instruction manual, XD	1
○ 21-1	QQTG0323A	ENGLISH	1
○ 21-2	QQTG0329A	中文	1
○ 21	QQFGEA1LA	Operating instruction manual, XT	1

ORDER NO. EMID9907010S
A4

Service Manual

Supplement

Electronic Organ

9770

SX-EA1

AREA

EZ .... Germany

This document is supplementary to the following Service Manual:

Model No.	Order No.
SX-EA1	EMID951576

Purpose

This supplement is intended to correct following items to the Service Manual above:
We changed cabinet into low formalin cabinet.

CORRECTION

Replacement Parts List [Refer to page Ⅲ-12.]

CABINET & CHASSIS PARTS

Ref. No.	Change of Part No.		Description	P/S
	Original ➡	New		
CABINET PARTS				
1	QKQGL041AAK	**QKQGL041AAZ**	Speaker Box	1
4	QKQGB360AA	**QKQGB360AAZ**	Left Plank Ass'y	1
8	QKUG1037AAK	**QKUG1037AAZK**	Rear Board, Speaker Box	1
9	QKQGM061AAK	**QKQGM061AAZK**	Pedal Box	1
12	QKQGB361AA	**QKQGB361AAZ**	Right Plank Ass'y	1

⚠ WARNING
This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

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Technics®

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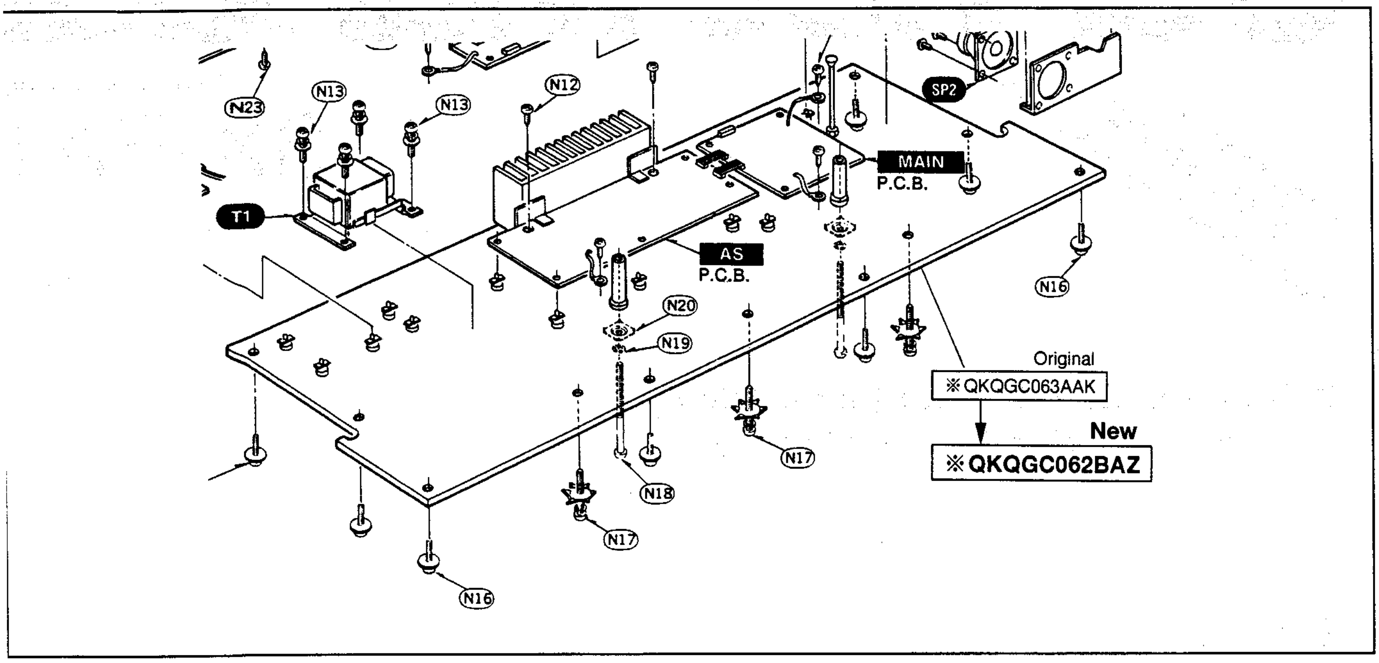
H99060550 H.H./K.K.
2238

■Cabinet Parts Location [Refer to page Ⅲ- 8.]


N23
N13
N13
N12
SP2
MAIN
P.C.B.
T1
AS
P.C.B.
N16
N20
N19
Original
※QKQGC063AAK
New
※QKQGC062BAZ
N17
N18
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N16